MINERALS APPENDIX

INTRODUCTION

This appendix contains in-depth information for minerals and management in the planning area. Information includes:

- procedures in oil and gas recovery;
- oil and gas leasing stipulations by alternative;
- oil and gas regulations;
- oil and gas production and development guidelines;
- reasonably foreseeable development (RFD) scenario for fluid minerals (including the RFD for the proposed Carter Master Leasing Plan [MLP] area);
- coal decisions carried forward under this plan; and
- the solid minerals RFD.

FLUID MINERALS

GEOPHYSICAL EXPLORATION

Oil and gas geophysical exploration activities include data acquisition by use of ground vehicle or aircraft. Data are acquired to determine structures that may contain oil or gas. Geophysical exploration does not include core drilling for subsurface geologic information or well drilling for oil and gas. A federal oil and gas lease is not required before conducting geophysical operations.

Information from geophysical exploration can assist in the selection of drill sites on existing leases or lead oil companies or others to request lands be offered for lease.

Existing road systems are used where available. Roads may be cleared of vegetation and loose rocks to improve access for trucks if that action is allowed by the permit. Because blading and road construction for seismic operations are not usually allowed, environmental impacts are minimized. Seismic work is conducted by helicopter or airplane rather than by ground vehicles in areas with rugged terrain, areas without access roads, or during certain seasons of the year. Geophysical operations that do not cause additional surface disturbance include remote sensing, gravity prospecting, and aeromagnetic surveying.

NOTIFICATION PROCESS

Geophysical operations on public lands are reviewed by the Bureau of Land Management (BLM). Exploration on public lands requires review and approval following the procedures in 43 Code of Federal Regulations (CFR) 3150, 3151, and 3154. Additional guidance is found in BLM Manual Section 3150 and Handbook 3150.

In the Miles City Field Office (MCFO), the field manager is authorized to approve geophysical operations. Geophysical operator and field manager responsibilities during geophysical operations are described below.

GEOPHYSICAL OPERATOR

The operator is required to file a Notice of Intent (NOI) to conduct oil and gas exploration operations (BLM Form 3150-4) for operations on public lands administered by the BLM. Maps (preferably 1:24,000 scale topographic maps) showing the location of the proposed lines and access routes must accompany the NOI. The BLM would review NOIs in the planning area and develop appropriate mitigation measures so as not to create undue and unnecessary degradation. A site-specific environmental review would occur for each NOI filed. When the NOI is filed, the authorized officer (AO) may request a pre-work conference or field inspection.

Special requirements or procedures that are identified by the AO are included in the Terms and Conditions for NOI to Conduct Geophysical Exploration (BLM Form 3150-4a and a copy of the state requirements). By signing the NOI and Terms and Conditions, the operator agrees to comply with requirements specified by the AO. The NOI, maps, and a signed copy of the Terms and Conditions must be filed in the BLM field office before operations begin.

Bonding of the operator is required. A copy of proof of satisfactory bonding shall accompany the NOI. Proper bonding may include a nationwide or statewide oil and gas bond, with a rider for geophysical exploration, or a $5,000 individual bond filed with the AO.

A full reclamation bond specific to the site would be required in accordance with 43 CFR 3104.2, 3104.3, and 3104.5. Bonds would be sufficient for costs relative to reclamation (Connelly, Schroeder, Sands, and Braun 2000; Hagen, Connelly, and Schroeder 2007) that would result in full restoration of the lands to the condition existing prior to disturbance. The reclamation costs would be based on the assumption that contractors for the BLM would perform the work.

The operator is required to comply with applicable federal, state, and local laws such as Federal Land Policy and Management Act of 1976 (FLPMA), the National Historic Preservation Act of 1966 (NHPA), and the Endangered Species Act of 1973 (ESA), as amended. Operators may be required to submit an archeological evaluation if dirt work is considered or there is reason to believe that significant cultural resources may be adversely affected. Any changes in the original NOI must be submitted in writing to the AO. Written approval must be secured before activities proceed.

When geophysical operations have been completed, the operator is required to file a Notice of Completion of Oil and Gas Geophysical Exploration (BLM Form 3150-5) and include certification that all terms and conditions of the approved NOI have been fulfilled. The operator must also submit a map (preferably a 1:24,000 scale topographic map) that shows the actual line location, access route, and other survey details.

BLM FIELD MANAGERS (AUTHORIZED OFFICERS)

The AO is required to contact the operator within 5 working days after receiving the NOI to explain the terms of the notice, including the terms and conditions, all current laws, and BLM administrative requirements. At the time of the pre-work conference or field inspection, written instructions or orders are given to the operator. The AO is responsible for the examination of resource values to determine appropriate surface protection and reclamation measures.

The AO is required to make a final inspection following filing of the Notice of Completion. When reclamation is approved, obligation against the operator's bond is released. The BLM has 30 days after filing of the Notice of Completion to notify the operator whether the reclamation is satisfactory or if additional reclamation work is necessary. Bonding liability will automatically terminate within 90 days after filing of the Notice of Completion unless the AO notifies the operator of the need for additional reclamation work.

STATE STANDARDS

Geophysical operators register with the state through the County Clerk and Recorder's office. State regulations include requirements for shothole locations, drilling techniques, plugging techniques, and reclamation.

MITIGATION

When a geophysical NOI is received, restrictions may be placed on the application to protect or mitigate impacts to resource values. Some of these requirements may be the same as oil and gas lease stipulations. Other, less restrictive measures may be used when impacts to resource values will be less severe, which is due in part to the temporary nature of geophysical exploration. The decisions concerning the level of protection required are made on a case-by-case basis when an NOI is received.

LEASING PROCESS

Federal oil and gas leasing authority is found in the 1920 Mineral Leasing Act, as amended, for public lands and the 1947 Acquired Lands Leasing Act, as amended (30 United States Code [U.S.C.] 351 et seq.), for acquired lands. Leasing of federal oil and gas is affected by other acts such as the Wilderness Act of 1964, NHPA, National Environmental Policy Act of 1969 (NEPA), ESA, FLPMA, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (30 U.S.C. 226 et seq.) Regulations governing federal oil and gas leasing are contained in 43 CFR 3100 with additional requirements and clarification found in onshore operating orders and Washington Office (WO) manuals and instruction memorandums.

The BLM planning process is the mechanism used to evaluate and determine where and how federal oil and gas resources will be made available for leasing. Areas where oil and gas development will conflict with other land uses or resources despite mitigation measures will be closed to leasing. Areas where oil and gas development could coexist with other land uses or resources will be open to leasing.

All leases are subject to the terms and conditions of the lease, found on the lease form, and federal regulations. Lease rights may be subject to lease stipulations and permit approval requirements. Leases may be issued with or without stipulations based upon decisions in the land use document. Stipulations are a part of the lease only when environmental and planning records demonstrate the necessity for the stipulations (modifications of the lease). See *Drainage Provisions* section below regarding leasing of unavailable lands within the planning area.

For lands open to leasing, the leasing process is initiated when members of the public file Expressions of Interest to nominate parcels for leasing to the BLM. Consistent with WO Instruction Memorandum (IM) No. 2010-117, an Interdisciplinary Parcel Review team of resource specialists review the nominated parcels and ensure compliance with NEPA and other legal and policy requirements. Because certain resources in the planning area require protection from impacts associated with oil and gas activities, the Interdisciplinary Parcel Review team may recommend lease stipulations. Lease stipulations are usually No Surface Occupancy (NSO), Controlled Surface Use (CSU), or Timing Limitation (Seasonal Restriction). A notice may also be included with a lease to provide guidance regarding resources or land uses. See the *Fluid Minerals; Lease Stipulations* in the Minerals Appendix.

In addition to an Interdisciplinary Parcel Review team review, the WO IM requires BLM to complete public involvement throughout the leasing process. Letters are sent to land owners, who own lands which overlie federal oil and gas minerals, at the time an Expression of Interest is filed to notify them of the oil and gas minerals being nominated. Two public review periods are conducted for each lease sale, a 15-day scoping period on the preliminary review of the nominated parcels and recommended stipulations, and a 30-day public comment period on the NEPA document. Proper coordination and/or consultation are also conducted throughout the leasing process with Tribes, external entities, and Surface Management Agencies.

Leases are issued as either a competitive or noncompetitive lease; both have a primary lease term of 10 years. All tracts must first be offered at an oral auction; the minimum bid per acre is $2.00. Competitive leases will be issued to the highest qualified bidder at the auction. Tracts that do not receive a bid during the auction will be available for noncompetitive leasing for a 2-year period after the sale date. If a noncompetitive offer is not filed within the 2-year period, the tract must be offered again at an oral auction before it can be leased. Rental payments for competitive and noncompetitive leases are $1.50 per acre for the first 5 years and $2.00 per acre thereafter until production is established. Leases will be issued with a fixed 12.5 percent royalty rate.

The lease grants the right to explore, extract, remove, and dispose of oil and gas deposits that may be found in the leased lands. Lease rights may be subject to lease stipulations and permit approval requirements, also known as conditions of approval (COAs). Stipulations and permit requirements describe how lease rights are modified. See the *Fluid Minerals; Lease Stipulations* for details on modifying lease stipulations and the COA section below for examples of COAs.

The terms and conditions of existing oil and gas leases would not be changed by the decisions in this document. However, post-lease actions or authorizations (e.g., Application for Permit to Drill (APD) or road or pipeline right-of-way (ROW)) would potentially be encumbered by mitigation measures, as necessary, on a case-by-case

basis as required through project-specific NEPA analysis or other environmental reviews. The stipulations and COAs would be in accordance with laws, regulations, and lease terms. The lease stipulations and permit COAs allow for management of federal oil and gas resources in concert with other resources and land uses. When a lease expires, it would be managed for oil and gas according to the decisions reached in the Resource Management Plan (RMP).

PLAN MAINTENANCE

New information may lead to changes in existing resource inventories. New use areas and resource locations may be identified or use areas and resource locations that are no longer valid may be identified. These resources usually cover small areas requiring the same protection or mitigation as identified in this plan. Identification of new areas or removal of old areas that no longer have those resource values will result in the use of the same lease stipulation identified in this plan. These areas will be added to the existing data inventory without a plan amendment. In cases where the changes constitute a change in resource allocation outside the scope of this plan, a plan amendment would be required.

OPERATING STANDARDS AND APPROVAL PROCEDURES

PERMITTING PROCESS

A federal lessee or the operator of record is governed by procedures set forth in Onshore Oil and Gas Order No. 1 (updated in May 2007), "Approval of Operations on Onshore Federal and Indian Oil and Gas Leases," issued under 43 CFR 3164. These procedures cover the full scope of operations on federal minerals, from initial permitting of the well, to subsequent operations, to final abandonment. Before beginning construction or drilling a well, the lessee or its operator must have an approved APD, including requirements for surface and subsurface operations.

In the initial permitting process, the lessee or its operator selects the location of a proposed drill site based upon the Montana Board of Oil and Gas Commission's (MBOGC) spacing requirements, subsurface geology, topography, and avoidance of known sensitive surface resource values. At that point, the lessee or its operator is able to survey and stake the well, access road and pipeline without notice to the BLM. Cultural inventories can also be obtained without notice.

After the lessee or its operator makes the decision to drill a well, it must decide whether to submit a Notice of Staking (NOS) or APD. The NOS and APD are described as follows:

NOS – The NOS is an abbreviated notice that consists of a NOS form, staked location map, and sketched site plan. This notice is posted for a 30-day public review and begins the processing timeframe for approval of the APD. The NOS triggers the onsite inspection of the well, which determines whether any conflicts with critical resource values are evident and provides the preliminary data to assess what additional items are necessary to complete the APD.

APD – The lessee or its operator can submit a completed APD in lieu of a NOS but, in either case, no surface-disturbing activity can be conducted in conjunction with the drilling operations until the APD is approved by the AO. The APD must be posted for a minimum of 30 days to allow for review by the public. If applicable, a copy of the APD is also posted with the Surface Management Agency.

In accordance to Onshore Oil and Gas Order No. 1, a complete APD must consist of a completed Form 3160–3; Well Plat, Drilling Plan, Surface Use Plan of Operations (SUPO), Bonding, Operator Certification, an Onsite Inspection, and anything else required by the AO.

The on-site inspection team includes BLM and surface management agency representatives, the operator or agent, and other interested parties, such as the dirt work contractor or drilling contractor. When the location is on private surface, the surface owner is invited. The purpose of the on-site inspection is to identify problems and potential environmental impacts associated with the proposal and methods to mitigate these impacts. Based

on information from the on-site inspection and the APD, the BLM develops COAs for individual APDs. These measures are designed to protect surface and subsurface resources located at or near the drilling location. The results of the on-site inspection and all mitigating measures are documented. The AO is responsible for preparing environmental documentation necessary in accordance to NEPA requirements and to provide any mitigation measures needed to protect the affected resource values.

Within 30 days after the lessee or its operator has submitted a complete application, including incorporating any changes that resulted from the onsite inspection, the BLM will:

- Approve the application, subject to reasonable COAs, if the appropriate requirements of the NEPA, NHPA, ESA, and other applicable law have been met and, if on United States Forest Service (USFS) lands, the USFS has approved the SUPO;
- Notify the lessee or its operator that it is deferring action on the permit; or
- Deny the permit if it cannot be approved and the BLM cannot identify any actions that the lessee or its operator could take that would enable the BLM to issue the permit or the USFS to approve the SUPO, if applicable.

When final approval is given by the BLM, the lessee or its operator can commence construction and drilling operations. Approval of an APD is valid for 2 years. If drilling does not begin within 2 years, the COAs can be revised with additional NEPA review prior to extending the APD for 2 more years.

For drilling operations proposed on lands with state or private mineral ownership, the lessee or its operator must meet the requirements of the mineral owner and the state regulatory agency. The BLM does not have jurisdiction over non-federal minerals; however, the BLM has surface management responsibility in situations of BLM surface located over non-federal mineral ownership.

BONDING

There are two types of bonds associated with oil and gas lease development activities, a 3104 Performance Bond and a Surface Owner Protection Bond, also known as a Damages Bond or 3814 Bond. BLM will not consider an APD or Sundry Notice administratively or technically complete until the federal lessee or its operator has the necessary bonds in place.

A 3104 Performance Bond is required when an APD is submitted to the BLM. It ensures compliance during drilling, production, plugging, and abandonment, and reclamation. The minimum bond amounts are: $10,000 per lease, $25,000 statewide, and $150,000 nationwide. The BLM can require a greater bond amount in accordance to federal policy.

A Surface Owner Protection Bond is applied if the lessee or its operator and surface owner fail to reach a Surface Use Agreement. Compliance with Onshore Oil and Gas Order No. 1 requires the federal mineral lessee or its operator to enter into good-faith negotiations with the private surface owner to reach an agreement for the protection of surface resources and reclamation of the disturbed areas, or payment in lieu thereof, to compensate the surface owner for loss of crops and damages to tangible improvements, if any. The lessee or its operator shall include as part of the APD or Sundry Notice, where surface disturbance will occur on the private surface, the surface owner's name, contact address, telephone number, and any other relevant and necessary contact information, if known. The APD or Sundry Notice shall also include a statement by the federal lessee or its operator that it has obtained one of the following:

(1) a surface owner agreement for access to enter the leased lands,
(2) a waiver from the surface owner for access to the leased lands,
(3) an agreement regarding compensation to the surface owner for damages for loss of crops and tangible improvements, or
(4) in lieu thereof, an adequate bond, sufficient in amount, to secure payment for loss of damages to crops and tangible improvements.

Prior to the approval of any APD or Sundry Notice, where surface disturbance will occur on the private surface, the AO will ensure compliance with these requirements. If a good-faith effort by the federal lessee, its operator or representatives has not produced an agreement with the surface owner as described in options (1), (2), or (3) above, the AO will require an adequate surface owner bond in an amount sufficient to indemnify the surface owner against the reasonable and foreseeable damages for loss of crops and tangible improvements from the proposed operations. Bond coverage depends on the statute under which the land was patented. For example, under the Stock Raising Homestead Act, for reasonable and foreseeable damages to crops (including grazing lands) and tangible improvements, the minimum amount is $1,000.

The surface owner has 30 days to object or accept the bond. The surface owner may appeal the BLM's final decision on the amount of the Damages Bond to the Interior Board of Land Appeals (IBLA). If the surface owner objects to the sufficiency of the bond under 43 CFR Subpart 3814, the AO for BLM will determine the sufficiency of the bond needed to indemnify the surface owner for the reasonable and foreseeable damages.

In the instances where the lessee or its operator cannot reach agreement with the surface owner and provides a surface owner bond, the federal lessee or its operator must provide the BLM the original bond and evidence of service of the bond on the surface owner, and evidence that the surface owner was notified of its right to object to the sufficiency of the bond in accordance with the procedures under 43 CFR 3814. After this evidence is provided, the BLM will independently notify the surface owner, in writing, of its rights under the procedures regarding protests and appeals to the sufficiency of the bond. The 3814 bond will be released after compensation of damages to crops and tangible improvements to the surface owner has occurred and the mineral lessee or operator requests release of the bond. BLM will make a reasonable effort to contact the surface owner and confirm that compensation has been received prior to release of the bond.

The Surface Owner Agreement between the surface owner and the lessee or its operator is not to be submitted as part of the APD or Sundry Notice, since it may contain confidential information regarding the agreement between the surface owner and the lessee or operator. However, a completed self-certification statement must be part of the permit. The surface owner can request that specific items be made part of the permit as COAs. The AO may include those conditions in the application if the AO deems them beneficial to the development of the lease and consistent with lease terms and conditions. Non-compliance with the approved permit and COAs by the lessee or its operator may result in an incident of non-compliance and assessments under the Oil and Gas Leasing Reform Act of 1987. Relief from non-compliance with conditions of the Surface Owner Agreement that are not part of the APD or Sundry Notice cannot be obtained by the Federal Inspection and Enforcement process.

APPEALS

The BLM's final decision may be appealed to the IBLA, Office of the Secretary, in accordance with the regulations contained in 43 CFR 4.400 and Form 1842 1 (Enclosure 10). If an appeal is taken, a Notice of Appeal must be filed in the field office at the aforementioned address within 30 days from receipt of the decision. A copy of the Notice of Appeal and of any statement of reasons, written arguments, or briefs must also be served on the Office of the Solicitor at the address shown on Form 1842 1. It is also requested that a copy of any statement of reasons, written arguments, or briefs be sent to the field office. The appellant has the burden of showing that the Decision appealed from is in error.

If the appellant wishes to file a Petition for a Stay of the decision, pursuant to 43 CFR 4.21, the Petition must accompany the Notice of Appeal. A Petition for a Stay is required to show sufficient justification based on the standards listed below. Copies of the Notice of Appeal and Petition for a Stay must also be submitted to each party named in the Decision and to the IBLA and to the appropriate Office of the Solicitor (see 43 CFR 4.413) at the same time the original documents are filed with the field office. If the appellant requests a stay, the appellant has the burden of proof to demonstrate that a stay should be granted.

Standards for Obtaining a Stay are listed below. Except as otherwise provided by law or other pertinent regulation, a petition for a stay of a Decision pending appeal shall show sufficient justification based on the following standards:

(1) the relative harm to the parties if the stay is granted or denied;
(2) the likelihood of the appellant's success on the merits;
(3) the likelihood of immediate and irreparable harm if the stay is not granted; and
(4) whether the public interest favors granting the stay.

CONDITIONS OF APPROVAL

An approval letter is sent to the operator that includes COAs, which the operator must follow from site construction through abandonment. COAs are mitigation measures that implement lease restrictions to site-specific conditions. In addition, the approval letter contains informational notices that cite the regulatory requirements from the CFR, Onshore Operating Orders 1 and 2 (BLM and USFS 2007a; BLM 1988), and other guidance.

Site-specific operating requirements are based on analysis of the proposed location for the well site. Operating requirements may affect the drilling program, access road, production facilities, water supply, waste disposal, well site layout, and surface restoration.

The following mitigation measures may be applied to permits as COAs. The listing is not all inclusive, but presents the most often used COAs in the planning area. The wording of the COA may be modified or additional COAs may be developed to address specific conditions.

Access Road

1. Prior to construction, a minimum of 4 inches of topsoil must be removed from the area necessary for road and ditch construction, including backslopes. Topsoil must be stored for use in reclamation.
2. For drilling and production operations, the access road must be flat-bladed but sloped to provide drainage off the road. The access road width must not exceed 16 feet.
3. For drilling and production operations, the access road must be crowned and ditched. The access road width must not exceed 16 feet. Ditches must have flat or rounded bottoms.
4. The access road must be surfaced with and maintained with, at a minimum, a 3-inch layer of gravel.
5. A minimum 18-inch diameter culvert (or culverts) must be installed in the designated drainage or drainages. The culvert or culverts must be installed on undisturbed ground and extend a minimum of 1 foot beyond the toe of the fill slopes. Riprap material must be placed at the inlet and outlet ends of the culvert or culverts.
6. A cattleguard must be installed at the designated fence crossing or crossings.
7. A low-water crossing must be constructed at the designated drainage or drainages. A minimum 6-inch layer of gravel must be placed on the road in the crossing.
8. The access road and associated structures must be maintained in a safe condition. Off-road vehicle travel is not authorized.

Well Pad

1. Prior to construction, a minimum of 4 inches of topsoil must be removed from the area necessary for pad construction, including to the toe of the cut and fill slopes. Topsoil must be stockpiled separately from all other material.
2. The reserve pit must be lined with an impervious plastic liner with a minimum 140 pounds per square inch burst strength and 30 pounds tear strength. The liner must be installed over material that will not puncture or tear the liner.
3. The reserve pit must be fenced on three sides during drilling operations and the fourth side after completion of drilling operations. Netting may be required over the reserve pit.
4. All storage tanks must be located on the well pad. Storage tanks must be surrounded with a dike or trench sloped to the reserve pit.
5. All trash must be stored in an enclosed container and disposed of in an approved disposal facility. Trash or debris is not allowed in the reserve pit.
6. Erosion control measures must be constructed or installed as prescribed.

Production Facilities

1. Storage tanks and treater must be located on the cut portion of the well pad.
2. The storage tanks and treater or the entire well pad must be surrounded by an earthen dike. The dike must be of sufficient size to contain 110 percent of the volume of the largest single tank in use.
3. Production facilities such as storage tanks and the treater and pump unit must be painted a specific color from the Munsell Soil Color Chart.
4. Fluid storage pits must be permitted, constructed, and maintained in accordance with state requirements.
5. The well site and production facility site must be maintained in a safe and orderly manner. All trash and debris must be stored in an enclosed container and disposed of at an approved disposal facility. All unused equipment must be stored in an orderly manner or removed. All containers must be installed and maintained in accordance with the manufacturer's and Occupational Safety and Health Act (29 U.S.C. 651 et seq.) requirements.

Reclamation

1. *Pit Reclamation*

    a. The pit must be closed properly to ensure protection of soil, water, and vegetation.
    b. The pit may not be cut or trenched.
    c. Prior to pit closure, free fluids must be removed and disposed of properly.
    d. Pit mud and sludge material may be buried on site after the material has been tested and has met the following criteria:

        - the range of pH is 6 to 9,
        - the moisture content is less than 50 percent by weight,
        - the oil and grease content is less than 3 percent by weight,
        - the electrical conductivity is less than 12 mmhos (millimhos) per centimeter (unconfined compressive strength: greater than 20 pounds per square inch), and
        - the total metals content must not exceed United States Environmental Protection Agency (USEPA) limits.

    e. The liner may be cut off above the pit material or pushed over the pit material.
    f. The pit material must be covered with a minimum of 5 feet of native soil.

2. *Site Reclamation*

    a. For production, the unused portion of the pad must be recontoured with slopes not steeper than 3:1. Proper drainage must be established. Erosion control measures may be required.
    b. For final abandonment, the site must be cleaned of all equipment, material, and debris. All surfacing material must be removed.
    c. For final abandonment, the site must be recontoured to blend with the adjacent terrain.
    d. Specific erosion control measures will be prescribed as necessary.
    e. For production or abandonment, recontoured areas must be scarified, mulched, and seeded. After scarification to a depth of 12 inches, topsoil must be spread evenly over the recontoured area. Weed-free straw mulch must then be applied evenly over the recontoured area at a rate of 1 ton per acre. The mulch must be crimped into the soil. The recontoured area must then be seeded with a prescribed seed mixture. Seed must be drilled on the contour with 6-inch drill row spacing at a depth of 0.5 to 0.75 inches. The most commonly prescribed grass species include:

        - western wheatgrass,
        - slender wheatgrass,
        - intermediate wheatgrass,
        - thickspike wheatgrass,
        - green needlegrass,

- dryland alfalfa, and
- yellow sweetclover.

f. After seeding, the site must be fenced with four strands of barbed wire, metal line posts, and wood corner and brace posts. The fence must be maintained to exclude livestock until reclamation work has been approved.
g. For final abandonment on privately owned surface, reclamation must be completed in accordance with the surface owner's requirements unless the surface owner defers to BLM requirements.
h. The reclamation work will be considered successful when the seeded area is stabilized, potential water erosion is effectively controlled, and the vegetative stand is established with at least a 60 percent cover of the prescribed grass species.
i. An interim reclamation plan may be required if the site has been constructed but no other work has been accomplished within 6 months after permit approval.

3. *Road Reclamation*

a. For final abandonment, the surfacing material and structures (culverts, cattleguards) must be removed.
b. For final abandonment, the road and ditches must be recontoured. Erosion control measures may be required.
c. For final abandonment, the recontoured area must be scarified, mulched, and seeded in the same manner as well sites.
d. For final abandonment, drainages must be restored to a free-flowing condition and the reclaimed area protected to prevent eroding and scouring.
e. For final abandonment on privately owned surface, reclamation must be completed in accordance with the surface owner's requirements unless the surface owner defers to BLM requirements.
f. The reclamation work will be considered successful when the seeded area is stabilized, potential water erosion is effectively controlled, and the vegetative stand is established with at least 60 percent cover of the prescribed grass species.

4. *Pipeline Reclamation*

a. The pipeline must be tested for leaks prior to backfilling the trench.
b. The trench must be backfilled immediately after completion of pipeline leak testing procedures. The fill material must be compacted.
c. Topsoil must be spread evenly over the disturbed area.
d. Erosion control measures must be installed as prescribed.
e. Drainages must be restored to a free-flowing condition and the reclaimed area protected to prevent eroding and scouring.
f. The disturbed area must be seeded in the same manner as well sites.

The following COAs in addition to any site-specific conditions are included with each approved APD.

1. *Verbal Notification*

a. Notify this office verbally at least 48 hours prior to commencing construction.
b. Notify this office verbally at least 12 hours prior to spudding the well. (To be followed up in writing within 5 days.)
c. Notify this office verbally at least 12 hours prior to running any casing or conducting a blowout preventer (BOP) tests. (To be followed up in writing within 5 days.)
d. Notify this office verbally at least 6 hours prior to commencing any Drill Stem Test.
e. Notify this office verbally at least 24 hours prior to plugging the well to receive verbal plugging orders. (Refer to Informational Notice Item 2, Drilling Operations, Onshore Order No. 2, for additional abandonment instructions.)
f. Notify this office verbally at least 24 hours prior to removal of fluids from the reserve pit.

Failure to comply within specified notification timeframes may incur an assessment under 43 CFR 3163.1 and may also incur civil penalties under 43 CFR 3163.2.

2. A complete copy of the approved APD, including conditions, stipulations, and the Hydrogen Sulfide contingency plan (if required) shall be available for reference at the well site during the construction and drilling phases. A copy of the approved SUPO and COAs shall be provided to the surface owner(s) prior to initiating construction.
3. This drilling permit is valid for either 2 years from the approval date or until the lease expires, whichever occurs first.
4. If any cultural values (sites, artifacts, human remains, etc.) are observed during operation of this lease/permit/ROW, they are to be left intact and the MCFO notified. The AO will conduct an evaluation of the cultural values to establish appropriate mitigation, salvage or treatment. The operator is responsible for informing all persons in the area who are associated with this project that they will be subject to prosecution for knowingly disturbing historic or archeological sites or for collecting artifacts. If historic or archeological materials are uncovered during construction, the operator is to immediately stop work that might further disturb such materials and contact the AO. Within 5 working days, the AO will inform the operator as to:

    - whether the materials appear eligible for the National Register of Historic Places (NRHP);
    - the mitigation measures the operator will likely have to undertake before the site can be used (assuming in site preservation is not necessary); and,
    - a timeframe for the AO to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate.

    If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation costs. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.
5. If any cultural or paleontological resources are unearthed/discovered during the construction of the proposed well location and associated actions, the operator shall cease work immediately and contact the appropriate official at the BLM MCFO as soon as possible, 406-233-2800.
6. It is the responsibility of the operator to control noxious weeds on lands disturbed in association with oil and gas lease operations. Lease-associated weed control strategies, when required by the BLM, are to be coordinated with any involved surface owners and local weed control boards. A pesticide-use proposal must be prepared and then reviewed and approved by the BLM, prior to any herbicide application on lands disturbed by federal oil and gas lease operations. A pesticide application record must be completed within 24 hours after completion of application of herbicides.
7. The operator is responsible for the suppression of any fires started as a result of operations. The contractor must have the necessary equipment, including fire extinguishers or water, to provide initial suppression of fire.
8. The abandonment marker shall exhibit the same information required for the well sign (refer to Informational Notice Item 6, Well Identification [43 CFR 3162.6]). The abandonment marker (steel plate welded to surface casing 4′ below ground level) must be installed when the well is plugged.
9. Additional requirements may be imposed if changes in operational or environmental conditions dictate.
10. This office shall be notified in writing if the well pad has been constructed but no drilling operations have been initiated within 6 months of the construction.

Informational Notice

The following items are from the federal oil and gas regulations (43 CFR 3160, Onshore Orders Numbers 1 and 2, Notice To Lessees (NTL), and other guidance). This is not a complete list of requirements but an abstract of some major requirements.

1. General Requirements

a. The lessee or designated operator shall comply with applicable laws and regulations; the lease terms, onshore oil and gas orders, NTLs; and other orders and instructions of the AO. Any deviation from the terms of the approved APD requires prior approval from the BLM (43 CFR 3162.1(a))
b. If at any time the facilities located on public lands authorized by the terms of the lease are no longer included in the lease (caused by a contraction in the unit or other lease or unit boundary change), the BLM will process a change in authorization to the appropriate statute. The authorization will be subject to appropriate rental or other financial obligations determined by the AO.

2. Drilling Operations (Onshore Order No. 2)

a. If Drill Stem Tests are run, all applicable safety precautions outlined in Onshore Order No. 2 shall be observed.
b. The proposed casing and cementing programs shall be conducted as approved to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals.

3. Well Abandonment (43 CFR 3162.3-4, Onshore Order No. 1, Sec. V)

a. Approval for abandonment shall be obtained prior to beginning plugging operations. Initial approval for plugging operations may be verbal, but shall be followed up in writing within 30 days. Subsequent and final abandonment notifications are required and shall be submitted on Sundry Notices and Reports on Wells, Form 3160.5, in triplicate.

4. Reports and Notifications (43 CFR 3162.4-1, 3162.4-3)

a. Within 30 days of completion of the well as a dry hole or producer, a copy of all logs, core descriptions, core analyses, well-test data, geologic summaries, sample descriptions, or data obtained and compiled during the drilling, workover, or completion operations shall be filed with Well Completion or Recompletion Report and Log, Form 3160-4, in duplicate.
b. In accordance with 43 CFR 3162.4-3, this well shall be reported on MMS Form 4054, "Oil and Gas Operations Report, starting with the month in which any operations commence, including drilling, and continuing each month until the well is physically plugged and abandoned.
c. Notify this office within 5 business days of production start-up if either of the below conditions occur:

i. the well is placed on production (shipment or sales of hydrocarbons from temporary tanks, production into permanent facilities, or measurement through permanent facilities); or
ii. the well resumes production after being off production for more than 90 days.

1. Notification may be written or verbal with written follow-up within 15 days and must include the following information:

a. operator name, address, and telephone number;
b. well name and number, county and state;
c. well location, ¼¼, Section, Township, Range, P.M.;
d. date well begins or resumes production;
e. the nature of the well's production (crude oil, or crude oil casing gas, or natural gas and entrained liquid hydrocarbons);
f. the federal or Indian lease number;

g. as appropriate, the Unit Agreement name, number, and Participating Area name; and
h. as appropriate, the Communitization Agreement number.

5. Environmental Obligations and Disposition of Production (43 CFR 3162.5-1, 3162.7-1 and 40 CFR 302.4)

a. With BLM approval, water produced from newly completed wells may be temporarily stored in reserve pits up to 90 days. During this initial period, application for the permanent disposal method shall be made to this office in accordance with Onshore Order No. 7. If underground injection is proposed, a USEPA or State permit shall also be obtained. If surface discharge of produced water is proposed, an MPDES permit shall also be required.
b. Spills, accidents, fires, injuries, blowouts, and other undesirable events must be reported to this office within the timeframes in NTL-MSO-1-92.
c. You are required to take all necessary steps to prevent any death of a migratory bird in pits or open vessels associated with the drilling, testing, completion, or production of this well. The death of any migratory bird found in such a pit or open vessel is a violation of the Migratory Bird Treaty Act and is considered a criminal act. Any deaths of migratory birds attributable to pits or open vessels associated with drilling, testing, completing or production operations must be reported to this office and the United States Fish and Wildlife Service (USFWS) within 24 hours. We may require that the pit be designed or the open vessel be covered to deter the entry of birds in any facility associated with drilling, testing, completion or production of this well. Fencing, screening and netting of pits may be required as a means to deter bird entry. These conditions would most likely be imposed to prevent the entry of migratory birds if oil is left in pits or open vessels after the cessation of drilling or completion of operations, if water disposal pits consistently receive oil, or if pits or open vessels are used repeatedly for emergency situations which result in the accumulation of oil. Voluntary pit fencing, screening and netting, or sealing vessels, is encouraged to avoid potential instances that may result in the death of a migratory bird.
d. Gas produced from this well may not be vented or flared beyond an initial, authorized test period of 30 days or 50 MMCF following its completion, whichever first occurs, without the prior, written approval of the AO. Should gas be vented or flared without approval beyond the test period authorized above, you may be directed to shut-in the well until the gas can be captured or approval to continue the venting or flaring as uneconomic is granted, and you shall be required to compensate the lessor for that portion of the gas vented or flared without approval which is determined to have been avoidably lost.

6. Well Identification (43 CFR 3162.6)

Each drilling, producing, or abandoned well shall be identified with the operator's name, the lease serial number, the well number, and the surveyed description of the well (footages or the quarter-quarter section, the section, township, and range). The Indian lessor's name may also be required. All markings shall be legible and in a conspicuous place.

7. Site Security (43 CFR 3162.7.5)

a. Oil storage facilities shall be clearly identified with a sign, and tanks must be individually identified (43 CFR 3162.6 (c)).
b. Site security plans shall be completed within 60 days of production startup (43 CFR 3162.7-5(c)).
c. Site facility diagrams shall be filed in this office within 60 days after facilities are installed or modified (43 CFR 3162.7-5(d)(1)).

8. Public Availability of Information (43 CFR 3100.4)

All submitted information not marked "CONFIDENTIAL INFORMATION" will be available for public inspection upon request. The exception is Indian lease information, which is always considered confidential.

You have the right to request a State Director Review of this decision and these COAs pursuant to 43 CFR 3165.3(b). A State Director Review, including all supporting documentation must be filed with the Montana State Office (MSO), State Director (MT-920) at 5001 Southgate Drive, Billings, Montana 59101-4669 within 20 business days of your receipt of this decision. If adversely affected by the State Director's decision, it can be further appealed to the IBLA pursuant to 43 CFR 3165.4, 43 CFR 4.411, and 43 CFR 4.413. Should you fail to timely request a State Director Review, or after receiving the State Director's decision, fail to timely file an appeal with IBLA, no further administrative review of this decision would be possible.

Field Office Address and Contacts

The approval letter concludes with the complete address, phone number, and business hours for the MCFO. A list of staff members, their job titles, and home phone numbers is also provided for the company to use when the office is closed.

MITIGATION MEASURES AND BEST MANAGEMENT PRACTICES

Mitigation measures and BMPs are restrictions on lease operations, which are intended to minimize or avoid impacts to resources or land uses from oil and gas activities. If needed, mitigation measures and BMPs would be applied to permits or approvals granted by the BLM as COAs. Mitigation measures and BMPs would be included as appropriate to address site-specific concerns as necessary, on a case-by-case basis as required through project-specific NEPA analysis or other environmental review. See the Mitigation Measures and Conservation Actions Appendix and the GRSG Required Design Features appendices for revisions and guidance.

SITE CONSTRUCTION

After the APD is approved, the operator moves construction equipment, usually dozers (track-mounted and rubber-tired), scrapers, and motor graders, over existing roads to the point where the access road will begin. Existing roads and vehicle routes are improved in places and, occasionally, culverts and cattle guards are installed as specified in the approved APD.

The length of the access road varies. Environmental factors or the landowner's wishes may dictate a longer route. In areas with gentle topography and shallow depth of wells , wells can typically be drilled using a truck-mounted rig, which often means that very little or no access road work is needed. In rough terrain, the type of construction is sidecasting (using the material taken from the cut portion of the road to construct the fill portion); slightly less than one-half of the roadbed is on a cut area and the rest is on a fill area. Roads are usually constructed with a l4-foot (single lane) running surface. Soil texture, steepness of the topography, and moisture conditions may dictate surfacing the access road. The total acreage disturbed for each mile of access road constructed varies significantly with topography.

Well locations are constructed by one of three different general types of construction but, in every case, all soil material suitable for plant growth is first removed and stockpiled in a designated area. Sites on flat terrain usually require little more than removing the topsoil material and vegetation. Drilling sites on ridge tops and hillsides are constructed by cutting and filling portions of the location. The majority of the excess cut material is stockpiled in an area that will allow it to be easily recovered for rehabilitation. It is important to confine extra cut material in a stockpile rather than cast it down hillsides and drainages where it cannot be recovered for rehabilitation.

The amount of level surface required for safely assembling and operating a drilling rig varies with the type of rig, and the depth and type of the well. The amount of level surface required averages 200 by 250 feet and should be constructed so that the drill rig can be placed on the cut surface instead of fill material to prevent the derrick from leaning or toppling as a result of the settling of uncompacted soil.

In addition to the drilling rig footprint, a reserve pit is constructed, usually square or oblong, but sometimes in another shape to accommodate topography. Generally, the reserve pit is 6 to 12 feet deep by 15 to 20 feet wide by 40 to 50 feet in length, but may be deeper to compensate for smaller length and width or deeper drilling depths. For air drilling, smaller reserve pits are used, usually less than 10 feet by 10 feet and approximately 6 to 10 feet in depth. Depending upon the soil permeability, pits can be lined with an impermeable material to contain the drilling fluids. If water is encountered while digging the reserve pit, a closed mud system consisting of steel tanks may be required. For oil-base mud, closed systems are mandatory, and the mud and cuttings must be recycled or disposed of in an approved manner.

Depending on how the drill site is located relative to a natural drainage, it may be necessary to construct water bars or diversions to control surface runoff and erosion. The area disturbed for construction and the potential for successful re-vegetation depends largely on topography, soil type, climate and the degree of disturbance. Necessary erosion mitigation measures are installed throughout the road and well site. Drilling activities usually begin within a week or two after the location and access road have been constructed. If the well is determined to be a dry hole, it will typically be plugged while the drill rig is still on location.

DRILLING OPERATIONS

To ensure that drilling and completion operations are conducted in a safe and environmentally sound manner, the BLM reviews, and evaluates, approves and regulates all drilling and completion operations, and related surface disturbance associated with Federal and Indian oil and gas mineral development. Operators must submit APDs to the agency in accordance to Onshore Oil and Gas Order No.1. Prior to approving an APD, the BLM identifies all potential subsurface formations that will be penetrated by the wellbore. This includes groundwater aquifers and any zones that would present potential safety or health risks that may need special protection measures during drilling, or that may require specific protective well construction measures. All well casing and cementing operations that occur on Federal/Indian lands would be reviewed and approved by BLM and conducted in accordance with the applicable requirements specified in Onshore Oil and Gas Order No. 2 and the American Petroleum Institute (API) standards.

VERTICAL DRILLING

The vertical wells producing in the planning area are completed in a variety of formations for both gas and oil. The most productive horizon completed have been those of the Red River, Eagle, Bakken, and Muddy Formations. Vertical well depths in Montana range from CBNG wells a few hundred feet in the south-central portion of the planning area to over 13,000 feet in the Williston Basin in Richland County.

DIRECTIONAL AND HORIZONTAL

The majority of the currently producing horizontal wells in the planning area are producing oil from the Ordovician Red River Formation and the Upper Devonian-Lower Mississippian Bakken Formation, a horizontal play in North Dakota, Montana, and Saskatchewan that recently has been the focus of drilling in the area.

Directional drilling may be used where the drill site cannot be located directly over the drilling target. There are limits to both the degree that the wellbore can be deviated from the vertical and the horizontal distance the well can be drilled away from the well site. Directional drilling can theoretically develop lands near the outer boundary of a lease affected by a NSO stipulation. Directional drilling can theoretically develop lands near the outer boundary of a lease affected by a NSO stipulation. Gas wells in the planning area are not deviated for technical and economic reasons. See *Drilling Access with NSO Stipulations on Oil Leases* below for additional information.

Some benefits of directional drilling include the avoidance of sensitive or inaccessible surface features (resulting in greater protection of sensitive environments), and, when multiple wells are drilled from the same vertical wellbore or from the same surface location, a reduction in drilling time, overall surface disturbance, and associated waste volumes and emissions.

While unconventional zones (methane-bearing coal zones, oil or gas bearing shale zones, gas hydrates or "tight gas" in low porosity or low permeability traditional zones), have long been surpassed by the oil and gas industry, recent technological advances in horizontal drilling and hydraulic fracturing described below, have allowed development of these formations that were once universally considered as uneconomic.

Horizontal drilling is defined as deviating a wellbore at least 80 degrees from the vertical so that the borehole penetrates a productive formation in a manner parallel to the formation. Most horizontal wells are drilled vertically from the surface to several hundred feet above the productive formation. The wellbore is then drilled in a curve ending with the well going horizontal through the productive formation.

In addition to the benefits listed for directional drilling above, another benefit of horizontal drilling is that it exposes the wellbore to a far greater surface area of hydrocarbon-bearing rock when compared to a typical vertical well. Horizontal wells tend to produce more than vertical wells since there is more reservoir rock exposed. This technology also eliminates the need to drill as many wells, since a horizontal well would be capable of producing the oil and gas from a larger areal extent. While this technology may reduce the overall foot print of an oil or gas field, as a result of having multiple wells (multi-well pad), and possibly production facilities on one well pad, the pad is typically larger in size to handle drilling and production operations. This reduces the acres of surface disturbance per well. See section below *Multiple Wells On A Single Well Pad* below for further details on multi-well pads.

Drilling time may be longer for a horizontal well than for a vertical well drilled to the same producing formation. The need for more drilling mud volume may also increase water needs, pit size or number of holding tanks on site compared to a vertical well to the same producing formation.

Drilling and completion costs for directional and horizontal wells are typically significantly higher than for conventional vertical boreholes, even when the cost savings associated with reduced need for surface disturbance is considered. Eustes (2003) and Fritz, Horn, and Joshi (1991) identified the following specialized requirements and risk factors unique to horizontal and directional drilling that can affect drilling and completion costs for these types of wells:

- specialized equipment (e.g., mud motors, measurement while drilling tools) and specially trained personnel;
- a larger drilling rig and associated equipment;
- casing and drilling string modifications to address problems associated with ovality and bending stresses;
- increased risk of borehole damage due to unique tectonic stresses;
- lengthened overall drilling time on location because more hole is drilled in S-shaped boreholes and horizontal boreholes compared to vertical wells;
- increased torque and drag on borehole equipment; and,
- lengthened overall drilling time on location compared to vertical wells because of slower penetration rates due to increased torque and drag in directional and horizontal wellbores (however, increased operator and driller experience with horizontal drilling has resulted in decreased drilling times in the Williston Basin over the past several years).

In addition to increased costs, the risk of losing the well because of geologic or mechanical failures is also greater in directional and, particularly, horizontal boreholes than in conventional vertical boreholes. As a result of these increased costs and risk, operators tend to prefer vertical over directional or horizontal boreholes unless special circumstances exist that make such drilling a necessity or economically attractive. For example, the geology of a reservoir may be such that a vertical borehole may only contact a few feet of the productive horizon, while a horizontal borehole may be able to contact tens to thousands of feet (depending on factors such as how the well is completed and the areal extent of the pool). In a case such as this, the operator must make the

determination that the increased potential for productivity outweighs the increased drilling costs and inherent risks involved in directional and horizontal drilling.

ROTARY DRILLING

The actual commencement of the drilling is referred to as spudding. Initially, drilling proceeds rapidly because of the unconsolidated nature of shallow formations. Drilling is accomplished by rotating the drill string and putting variable weights on the bit located at the bottom of the string. The weight on the bits is controlled to maintain as vertical a hole as possible or deviate from vertical when desired, and to prevent premature wearing of the bit. While drilling, the derrick and associated hoisting equipment bear a majority of the drill string's weight. The combination of rotary motion and weight on the bit causes rock to be gouged away at the bottom of the hole. The rotary motion is created by a square or hexagonal rod, called a kelly, which fits through a square or hexagonal hole in a large turntable, called a rotary table. The rotary table sits on the drilling rig floor and, as the bit advances, the kelly slides down through it. When the kelly has gone as deep as it can, it is raised and a new piece of drill pipe about 30 feet in length is attached in its place. The drill pipe is then lowered, the kelly is reattached, and drilling recommences. When the bit becomes dull, it is necessary to "trip" the drill string and replace the bit. This is a time-consuming process of withdrawing 90-foot sections of the drill pipe until the bit is out of the hole. Once the bit is replaced the drill string is reassembled, lowered into the hole, and drilling recommences. This process requires a large part of the total drilling time and may cause other hole problems. New bits constructed with modern metals and manufactured polycrystalline diamonds, along with down hole mud motors, have revolutionized drilling operations so that thousands of feet of hole can be drilled with one bit run.

Drilling mud is circulated through the drill pipe to the bottom of the hole, through the bit, up the annulus of the well, across a screen that separates the rock chips, and into holding tanks from which finer sediments settle from the mud before it is pumped back into the well. The mud is maintained at a required weight and viscosity to cool the bit, reduce the drag of the drill pipe on the sides of the hole, seal off any porous zones, contain formation fluids to prevent a blowout, and bring the rock chips to the surface for disposal. Various additives are used in maintaining the mud at the appropriate viscosity and weight. Most of the mud consists of bentonite, a naturally occurring mineral that is mined in Montana. Drilling muds are not allowed to contain any hazardous or toxic substances.

High pressure air is sometimes used in place of mud. The use of mud or air is largely dependent upon the target formation, drilling depth and type of completion desired. When drilling with air, the cuttings are blown into another pit called the blooie pit, where compressed air and cuttings leave the drill system. By regulation, the blooie pit must be located no closer than 100 feet from the well bore.

All cementing operation plans are reviewed and conducted in accordance with the applicable requirements specified in Onshore Oil and Gas Order No. 2 and the API standards. This ensures cement is placed at the appropriate depths and a sufficient quantity is utilized to effectively seal all freshwater-bearing formations from contamination by inter-formational mixing or migration of fluids.

A determination is made regarding the productive potential of the well. If oil or gas is not discovered in commercial quantities, the well is considered dry. The operator is then required to follow BLM procedures to properly plug the dry hole. The drill site and access road are then rehabilitated in accordance with the approved APD. If the well will be completed for production, drilling rig operations continue until the production casing is cemented into the well prior to removing the drilling equipment from the location. BLM personnel would conduct inspections of the drilling rig and operations to ensure compliance with the approved plans in the APD and regulations.

REVERSE CIRCULATION DRILLING

Reverse circulation drilling uses a dual-wall drill string. Drilling fluid is carried to the bit between the outer and inner wall of the drill pipe and cuttings and fluid are returned to the surface in the inner part of the pipe. Reverse circulation drilling appears to be an ideal system for drilling and producing tight low- or under-pressured formations that could be easily damaged by conventional drilling. K2 Energy of Calgary has applied this

technology to successfully drill and test gas wells in the low-pressure (formation pressure estimated at 150 pounds per square inch) Bow Island Formation on the Blackfeet Indian Reservation and in the Montana Thrust Belt (Mackay, 2003). The planning area does not lend its self to this drilling method.

SLIMHOLE DRILLING AND COILED TUBING

Slimhole drilling, a technique used to recover reserves in mature fields, has not yet been used much in the Rocky Mountain area. This technique has the potential to improve efficiency and reduce costs of both exploration and production drilling. Coiled tubing used effectively for drilling in reentry, underbalanced, and highly deviated wells is often used in slimhole drilling. Most coiled tubing rigs are limited to relatively shallow drilling. Most planning area oil wells have been historically drilled to depths greater than 5,000 feet and would not be as amenable to coiled tubing rigs. Coiled tubing will most likely be first used in some workover situations in the planning area.

LIGHT MODULAR DRILLING RIGS AND PAD DRILLING

Light modular drilling rigs can be more easily used in remote areas and are quickly disassembled and moved. Rig components are made with lighter and stronger materials and a modular nature reduces the impacts of surface disturbance. Also, these rigs reduce fuel use and emissions. Light modular rigs also have potential for use in situations in which pad drilling is being used. Pad drilling refers to the drilling of multiple directional boreholes from one surface location. Pads are the flat, graded land surfaces that serve as the foundation for the drilling rig. Since modular rigs allow quicker breakdown and movement to new locations, they reduce time to drill and rig costs. Shallow drilling targets in the planning area are not conducive to the use of significant amounts of directional drilling so pad drilling would be unlikely in those parts of the planning area.

PNEUMATIC DRILLING

Pneumatic drilling is a technique in which boreholes are drilled using air or other gases rather than water or other drilling liquids. This type of drilling can be used in mature fields and formations with low downhole pressures and where formations are sensitive to the fluids commonly used in drilling. Some formations in the planning area meet these criteria. This type of drilling significantly reduces waste, shortens drilling time, cuts surface disturbance, and decreases power consumption and emissions.

CASING

All well casing and cementing operations that occur on Federal/Indian lands would be reviewed and approved by BLM and conducted in accordance with the applicable requirements specified in Onshore Oil and Gas Order No. 2 and the API standards.

Various types of casing are placed in the drilled hole to enhance completion operations and safety. Casing is a string of steel pipe composed of approximately 40-foot lengths of pipe that are threaded together. Casing is cemented into the wellbore to protect against migration of fluids within the hole and to isolate the productive zones so they can be completed and produced without interference from other zones containing hydrocarbons or water. Hole deviation, depth, bore hole environment, placement of centralizers (if any), and a myriad of other factors affect the integrity of the casing and cement job and must be considered in the original design.

Surface casing that is properly set and cemented also protects surface aquifers from contamination by drilling and production operations. Surface casing is set to a depth greater than the deepest fresh water aquifer that could be reasonably developed. Usable water may exist at greater depths but these aquifers are not normally considered to be important water sources. Surface casing is designed to be large enough to allow subsequent strings of smaller casing to be set as the well is drilled deeper. Cement is placed in the annulus of the surface casing from casing shoe to ground level. The surface casing is the first string on which BOP equipment is installed. The BOP allows the well to be shut in at any time that conditions warrant, protecting against unanticipated formation pressures and allowing safe control of the well. BOP equipment is tested and inspected regularly by both the rig personnel and the inspection and enforcement branch of BLM. Minimum standards

and enforcement provisions are part of Onshore Order No. 2. Well-trained rig personnel are a necessity for proper blowout prevention.

Production casing is designed to provide isolation of oil and gas formations and also to provide a high-pressure conduit to the hydrocarbon zones that allows stimulation of these intervals to improve the productivity. In accordance with federal regulations, production casing is required to be cemented from the production casing shoe all the way to the surface. This requirement ensures adequate protection from interzonal migration of unsuitable water and hydrocarbons.

WELL LOGGING

Geophysical logs are obtained by running various instruments into the hole on a wire cable. Logs are usually run at a depth point where production casing will be installed. A log is not usually run before surface casing is set but, in most instances, a log recording natural gamma radiation is run through the surface casing to determine the geology of that section. The logs can determine water resistivity, hydrocarbon saturations, natural gamma radiations, porosity of the rock by density, permeability, pressure, temperature, hole geometry, and subsurface track. Logs are used to evaluate whether the well is dry or has the potential for a satisfactory completion. Logs also delineate the various geologic horizons; hydrocarbon zones; fresh, usable, and unusable water; and sands, shales, limestones, coals, and other minerals. Logs are used to specify hydrocarbon these intervals so that they can be perforated and stimulated during the completion program. Normally in the planning area, logs recording resistivity, porosity log of density, cement bond characteristics, and nuclear receptivity may be run in the well.

COMPLETION OPERATIONS

WELL TESTING AND COMPLETION

After the well is drilled, testing operations would commence. If testing indicates the presence of an economic level of oil and/or gas, the well would be completed. Typical completion operations would involve setting and cementing the production casing to the total depth of the well. There are also instances where casing is set at the top of the target zone, and the formation is completed in the open hole.

To ensure that drilling and completion operations are conducted in a safe and environmentally sound manner, the BLM approves and regulates all drilling and completion operations as discussed above in the *Drilling Operations* section.

After the proper casings are set, wells are often treated to improve the recovery of hydrocarbons by increasing the rate and volume of hydrocarbons moving from the natural oil and gas reservoir into the wellbore. These processes are known as well-stimulation treatments, and they are designed to create new fluid passageways in the producing formation or remove blockages within existing passageways. They include fracturing, acidizing, and other mechanical and chemical treatments often used in combination. The results from the different treatments are additive and often complement each other, which makes it possible to introduce fluids carrying sand, walnut hulls, or other small particles of material into the newly created crevices to keep the fractures open when the pressure is relieved. This increases the flow rate and volume of reservoir fluids that move from the producing formation into the wellbore.

Water produced during drilling and completion operations is contained in a lined reserve pit or in steel tanks on location. The water can be disposed of by trucking it to an authorized disposal pit, allowing the water in the lined pit to evaporate within required timeframes, through subsurface injection, or treated and reused to drill or complete another well. The disposal of water generated during drilling and completion operations in an injection or disposal well requires permit(s) from the primacy state or the USEPA. See *Produced Water* section below for details on primacy. A NEPA analysis is prepared for all requests concerning disposal of water generated from federal wells and in accordance to federal and state regulations.

After completion operations are finished, wellhead equipment consisting of various valves and pressure regulators are installed to control the oil or gas flow to the production facilities and allow safely shutting in the well under any conditions.

HYDRAULIC FRACTURING

Hydraulic fracturing has been utilized by the oil and gas industry since the late 1940s. Within the planning area, hydraulic fracturing, in conjunction with horizontal drilling described above, has allowed for development of unconventional zones that were once considered uneconomical, like the Bakken and Three Forks Formations in the Williston Basin area.

Hydraulic fracturing is a technique used to create additional space and connecting existing fractures and existing rock pores with newly created fractures that are located in deep underground geologic formations. The induced space allows the rock to more readily release oil and natural gas so it can flow to the surface via the well bore that would otherwise be uneconomical to develop. Wells that undergo hydraulic fracturing may be drilled vertically, horizontally, or directionally and the resultant fractures induced by the hydraulic fracturing can be vertical, horizontal, or both. The typical steps of hydraulic fracturing can be described as follows:

1. Water, sand and additives are pumped at high pressures down the wellbore.
2. The liquid goes through perforated sections of the wellbore and into the surrounding formation, fracturing the rock and injecting sand or other proppants into the cracks to hold them open.
3. Experts continuously monitor and gauge pressures along with the volume of fluids and proppants, while studying how the sand reacts when it hits the bottom of the wellbore; slowly increasing the density of sand to water as the frac progresses.
4. This process may be repeated multiple times, in "stages" to reach maximum areas of the wellbore. When this is done, the wellbore is temporarily plugged between each stage to maintain the highest water pressure possible and get maximum fracturing results in the rock.
5. Frac plugs are drilled or removed from the wellbore and the well is tested for results.
6. The water pressure is reduced and fluids are returned up the wellbore for disposal or treatment and re-use, leaving the sand in place to prop open the cracks and allow the oil/gas to flow to the well bore.

Fracturing fluid is typically more than 98 percent water and sand, with small amounts of readily available chemical additives used to carry the proppant and control the chemical and mechanical properties of the water and sand mixture. Proppant, consisting of synthetic or natural silica sand, may be used in quantities of few hundred tons for a vertical well to a few thousand tons for a horizontal well. The amount of water needed to fracture a well in the planning area depends on the geologic basin, the formation, and depth and type of well (vertical, horizontal, directional), and the proposed completion process. The amount of water used to hydraulic fracture a Bakken or Three Forks well is approximately 2-4 million gallons (6.1 to 12.3 acre-feet) of freshwater (EPA, 2012).

Several sources of water are available for hydraulic fracturing and drilling operations in the planning area. The use of any specific water source on a federally administered well, requires the proposal be reviewed and analyzed through the NEPA process for BLM approval during the APD stage to ensure compliance with Montana water laws and federal regulations.

All project proponents must adhere to Montana water laws when obtaining and using specific sources of water. Important parts of Montana's statutes include:

- Water cannot be transported for out-of-state use.
- Any new beneficial use of water requires a Provisional Permit.
- A change in point of diversions, place of use, purpose of use, or storage of an existing water right requires a Change Authorization.

Potential water sources available for hydraulic fracturing and drilling operations in the planning area are:

- Water transported from outside the state. The operator may transport water from outside the state as long as stringent Montana water law requirements are met.
- Irrigation water leased or purchased from a landowner. The landowner may have rights to surface water, delivered by a ditch or canal that is used to irrigate land. The operator may choose to enter into an agreement with the landowner to purchase or lease a portion of that water. This is allowable; however, the water right is limited to the period of diversion, point of diversion, place of use, and purpose of use identified. For example, the use of an irrigation water right is limited to irrigation use including the period of diversion of that use, and cannot be used for well drilling and hydraulic fracturing operations. To allow its use for drilling and hydraulic fracturing, the owner of the water right and the operator must apply to change the water right through a formal process with the Montana Department of Natural Resources and Conservation (MDNRC). If the proposed use is needed year-round, the operator must apply for a provisional permit for the period not covered by the irrigation right with MDNRC.
- Temporary Water Right Lease. A water right may be temporarily leased by the water right owner. The temporary process is less rigorous that a permanent lease; however, authorization to lease the water right must be obtained through MDNRC.
- Treated water or raw water leased or purchased from a water provider. The operator may choose to enter into an agreement with a water provider to purchase or lease water from the water provider's system. Municipalities and other water providers may have a surplus of water in their system before it is treated (raw water) that can be used for drilling and hydraulic fracturing operations. This would be allowed only if the operator's use were compliant with the water provider's water rights.
- Water treated at a waste water treatment plant leased or purchased from a water provider. Municipalities and other water providers discharge their treated waste water into the streams where it becomes part of the public resource, ready to be appropriated once again in the priority system. Proper authorizations would need to be obtained from MDNRC.
- New diversion of surface water flowing in streams and rivers. New diversion of surface waters in many parts of the state are rare because the surface streams are already "over appropriated," that is, the flows do not reliably occur in such a magnitude that all of the existing water rights on those streams can be satisfied. Therefore, the only time that an operator may be able to divert water directly from a river is during periods of high flow and less demand. These periods do occur but not reliably or predictably. The operator must apply for all new diversions and receive a provisional permit from MDNRC.
- Produced Water. Water produced at an existing oil or gas well for drilling and hydraulic fracturing operations; however, a water right is required from MDNRC.
- Reused or Recycled Drilling Water. Water that is used for drilling of one well may be recovered and reused in the construction of subsequent wells. The BLM encourages reuse and recycling of both the water used in well drilling and the water produced at an existing oil or gas well. A water right is required and would need to be granted specifically to accommodate the reuse.
- On-Location Water Supply Wells. Operators must apply for, and receive, permission from the MDNRC to drill and use a new water supply well. These wells are usually drilled on location to provide an on-demand supply. These industrial-type water supply wells are typically drilled deeper than nearby domestic and/or stock wells to minimize drawdown interference, and have large capacity pumps. The proper construction, operation and maintenance, backflow prevention and security of these water supply wells are critical considerations at the time they are proposed to minimize impacts to the well and/or the waters in the well and are under the jurisdiction of the MDNRC. Plugging these wells is also under the jurisdiction of the MDNRC.

Montana's water law can change on a yearly basis. Additional information can be obtained at the local MDNRC Water Resources Office to ensure the proper authorizations are in place prior to using specific water sources in Montana.

Before hydraulic fracturing takes place, all surface casing and some deeper, intermediate zones are required to be cemented from the bottom of the cased hole to the surface in accordance to Onshore Oil and Gas Order No. 2, MBOGC rules and regulations, and API standards. The cemented well is pressure tested to ensure there are no leaks and a cement bond log is run to ensure the cement has bonded to the casing and the formation.

MBOGC regulations also ensure that all resources including groundwater are protected. The MBOGC regulations require new and existing wells which will be stimulated by hydraulic fracturing must demonstrate suitable and safe mechanical configuration for the stimulation treatment proposed. If the operator proposes hydraulic fracturing through production casing or through intermediate casing, the casing must be tested to the maximum anticipated treating pressure. In accordance with MBOGC Rule 36.22.1015 operators are required to disclose and report the amount and type of fluids used in well stimulation to the Board or, if approved by the Board, to the Interstate Oil and Gas Compact Commission/Groundwater Protection Council hydraulic fracturing web site (FracFocus.org).

PRODUCTION AND DEVELOPMENT

GAS PRODUCTION

The installation of gas production facilities generally requires little additional surface disturbance beyond that necessary for drilling and completion; however, additional disturbance could result from pipeline and gathering line installations if they are installed across undisturbed areas. If pipelines follow existing access roads, no appreciable additional surface disturbance is necessary to hook the well up to production.

Equipment that would stay with the well during its life include a well head, a gas meter house usually a 10 feet by 10 feet by 8 feet skid-mounted steel shed that houses the well head and gas flow meter, and a pumpjack if necessary. Pumpjacks are used when water is produced with the gas or there is a gas reservoir pressure decline to a point that is not adequate to overcome the hydrostatic pressure created by a column of water in the well. Pumpjacks are usually 8 to 10 feet in height, require a slightly larger surface area than a gas meter house, and may or may not be skid-mounted. They are powered by either electric motors or natural gas/propane internal combustion engines. Production facility colors are required to be from the standard color chart and are specified in the APD COAs.

If the gas well is producing some oil or condensate, oil tanks are used to store the oil or condensate until it is sold via truck or pipeline. Pipeline quality gas at the wellhead requires a minimum of processing equipment. As the quality of gas decreases with the increased presence of water, solids, or liquid hydrocarbons, the amount of processing equipment increases. Water or liquid hydrocarbons in the gas are removed before the gas is sold, usually in the separation equipment near the wellhead. If liquid hydrocarbons are present, storage facilities (tank batteries) are required to store the liquids until they accumulate in sufficient quantities to be hauled out by large trucks.

Typical wells in the planning area are identified as “sweet gas” wells, that is, they contain no hydrogen sulfide gas; therefore, hydrogen sulfide facilities are generally not required to be used in order to produce the gas. As the wells produce in an area, pressures eventually become depleted to the point that they require an artificial lift method to lower the well pressure to allow for production to continue. Once this occurs, the operator may design and install a compressor station that further enables the production of natural gas from the wells.

Water produced from gas wells is managed in accordance to Onshore Oil and Gas Order No. 7 Disposal of Produced Water. See *Water Production* below.

Gas that occurs with oil well production is managed in accordance with NTL-4A. Gas is separated at the tank battery. If enough casinghead gas is separated to make it economical for marketing, a plant can be constructed to process the gas, or a pipeline can be constructed to carry the product to an existing plant. If the volume of casinghead gas is insufficient or uneconomic to warrant marketing, it is usually used as fuel for pump engines in the field, heating fuel for the heater-treaters, or is flared or vented into the atmosphere as approved by the AO.

OIL PRODUCTION

In the planning area, oil is generally produced using artificial lift methods (pump units). The oil production equipment (heater-treater, tank battery, and holding facility for production water) is either placed on a portion of the location (on cut rather than fill) and located a safe distance from the wellhead, or placed as a centralized

facility that services a number of wells with a pipeline connection. The heater-treater and tanks are surrounded by earthen dikes to contain accidental spills. Either all of the facilities or only the produced water pit (if present) will be fenced. Production facility colors are required to be from the standard color chart and are specified in the APD COAs.

Production from several wells on one lease can be carried by pipeline to a central tank battery. Use of a central tank battery can depend on whether the oil is from the same formation, the same lease ownership, or multiple lease ownerships and formations if a commingling agreement is approved. Generally, because of the nature of the oil, adequate separation of oil and water is only obtained through applications of heat. The fluid stream arrives at a separator point where the flash gas is taken off and, in most cases; this flash gas is used for lease operations. The remainder of the flash gas is either compressed and sold or flared. Flash gas is defined as solution gas liberated from the oil through a reduction in pressure. Water and oil are also separated at this point by gravity segregation. The oil is sent to storage tanks, and the water is sent to a disposal or injection facility. Once the oil is in the storage tanks, it can then be measured and sold. The primary method of oil measurement in the planning area is tank gauging. Measurement is required by 43 CFR 3162.7-2 and Onshore Order No. 4 to ensure proper and full payment of federal royalty.

Oil wells can be completed as flowing (those wells with sufficient underground pressure to raise the oil to the surface) or, if the pressure is inadequate, they are completed with the installation of subsurface pumps. The subsurface pumps are usually mechanically powered by a pumping unit. Pumping units come in a variety of sizes; however, most pumping units in the planning area are 15 feet or less in height. The units are powered by internal combustion engines or electric motors. Fuel for the engines may be casinghead gas or propane. In cases where large volumes of water are produced with the oil, electric submersible pumps may be installed. These pumps may produce up to 6,000 barrels of fluid per day at an oil cut of 1/2 of 1% oil.

COAL BED NATURAL GAS PRODUCTION

Typical coal bed natural gas (CBNG) production combines high water production rates of some oil fields with low-pressure operations of some gas fields. Because of the reservoir characteristics of coal, high water production rates are initially required to dewater the reservoir and allow gas to be liberated from cleat surfaces within the coal. In a coal reservoir, gas is primarily trapped on the face of the coal within the cleat system via molecular attraction. Pressure must be reduced to liberate the gas molecules from the coal face. The production history of typical CBNG wells shows that water production rates begin high, with little or no gas. The water rate then drops at a constant rate, with increasing gas rates until a maximum gas rate is achieved relative to the original gas saturation and reservoir pressures. The gas rate then declines to the economic limit. This process is the exact opposite of that associated with most oil and gas production, which starts at high hydrocarbon rates and low water rates and advances to low hydrocarbon rates and high water rates. The depth limit of a CBNG well is dictated by the coal permeability, which is highly sensitive to overburden weight.

A CBNG operation usually consists of a high-capacity submersible or progressive cavity pump, with water produced out of the tubing and low-pressure gas produced out of the casing. Centralized facilities collect the gas for compression to pipeline pressures and the water for disposal. Electric power is usually used to power the well pumps and is connected to the well via a subsurface cable (or overhead power) laid with the water and gas lines. The producing well pad is very small, with only the well head and an insulating house to cover the well head. Operators have begun to complete wells as monobore wells (multiple zones are completed at the same time and produced from the same well bore to help reduce surface disturbance). The centralized production facilities typically contain well header buildings where the individual well gas is measured and that house collection tanks, injection wells, pumps for disposal of the water, and multistage compressors to bring the very low pressure gas to sales line pressure.

WATER PRODUCTION

Associated water produced with the oil, gas, or CBNG production operations is disposed of in accordance with Onshore Oil and Gas Order No. 7. Disposal methods include trucking the water to an authorized disposal pit, placing the water in lined or unlined pits, discharging the water into surface drainages, or through subsurface injection. The disposal of produced water in an injection or disposal well requires permit(s) from the primacy

state or the USEPA. Primacy means that a state or agency has the ultimate responsibility for permitting and monitoring the Underground Injection Control program for Class 2 wells (saltwater disposal and secondary recovery wells). Montana is currently a primacy state candidate; operators in Montana must seek USEPA approval until primacy is granted. In some instances, an additional surface management agency authorization may be necessary. The quality of the water often dictates the appropriate disposal method, and the Montana Department of Environmental Quality (MDEQ) has primacy through the USEPA to approve surface disposal of this water. A NEPA analysis is prepared for all requests concerning disposal of produced water from federal wells and in accordance to federal and state regulations.

FURTHER SEISMIC TESTING

More detailed seismic work can be done to achieve better definition of the petroleum reservoir. Diagonal seismic lines can be required to tie the previous seismic work to the discovery well. The discovery well can be used to conduct studies to correct the previous seismic work and provide more accurate subsurface data.

SPACING REQUIREMENTS

A well-spacing pattern must be established before development drilling begins (Table 1). Information considered in establishment of a spacing pattern includes data from the discovery well on porosity, permeability, pressure, composition, and depth of formations in the reservoir; well production rates and type (predominantly oil or gas); and the economic effect of the proposed spacing on recovery. The MBOGC establishes well-spacing patterns for both exploratory and development wells. The state specifies the minimum distance from lease lines or government survey lines for the bottomhole location of the wellbore, depending upon depth of the oil well and specifies a minimum distance for gas wells. The spacing regulations determine the acres assigned to each well.

TABLE 1.
GENERAL STATEWIDE SPACING RULES FOR MONTANA

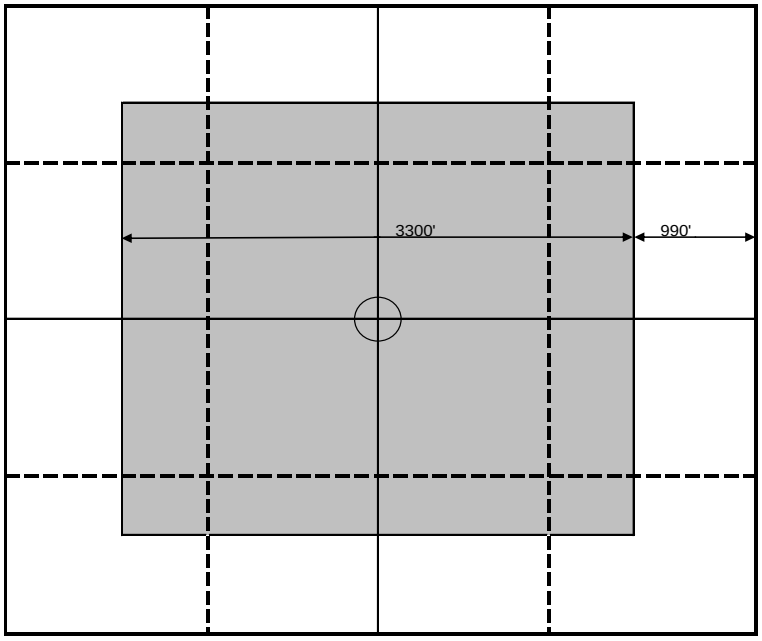
Well Depth (feet)	Spacing (acres)	Nearest Boundary (feet)	Topographic Tolerance (feet)	Minimum Well Distance (feet)
0 to 6,000	40 and 80	330	75	255
6,001 to 11,000	160	660	150	510
11,001 and greater	320	660	none	none

Source: BLM 1995

Spacing unit size is established to provide for the most efficient and economic recovery of oil or gas from a reservoir. Well spacing ranges from 40 acres to 640 acres (Figures 1 and 2). Well depths greater than 0 feet below ground surface should have a minimum distance of 990 feet from the section boundary (Figure 1). Only one producing well per formation in each 40-, 80-, 160-, 320-, and 640-acre unit is allowed. For the 320 acre spacing (1,650 well tolerance) and the 80 acre spacing, the drilling unit will be delineated either north to south or east to west. Wells should be drilled within the shaded areas identified in Figures 1 and 2.

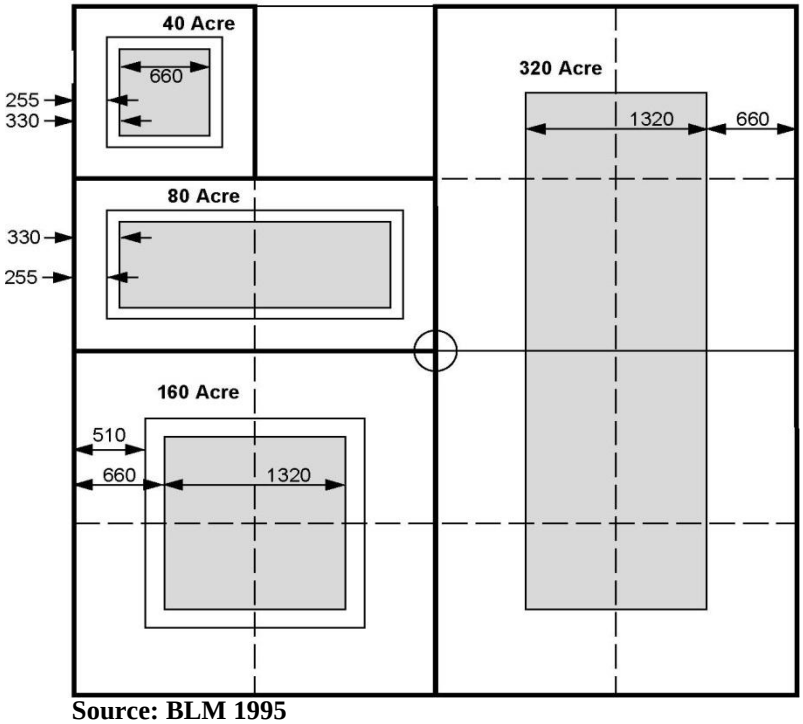
The procedures used in drilling development wells are the same as those used for wildcat wells, but usually with less subsurface sampling, testing, and evaluation. The rate at which development wells are drilled in a field depends on factors such as whether the field is developed on a lease basis or unitized basis, the probability of profitable production, the availability of drilling equipment, lease requirements, and the degree to which limits of the field are known.

FIGURE 1.
GAS WELL SPACING SECTION PLAT



Source: BLM 1995

FIGURE 2.
OIL WELL SPACING SECTION PLAT



Source: BLM 1995

FLOWLINES

Oil and gas are transferred from the well to storage facilities through small diameter (<6 inches) flow lines. Flow lines can be on the surface, buried, or elevated. Produced water, gas or polymerized liquid is transferred from storage facilities to injection wells for secondary recovery.

SEPARATING, TREATMENT, AND STORAGE

Any water or gas associated with produced oil is separated from the oil before it is placed in storage tanks. The treating facilities are located at a storage tank battery. Low-pressure petroleum that must be pumped from the well is treated in a single separation. High-pressure, flowing petroleum can require several stages or separation, with a pressure reduction accompanying each stage.

When gas is produced with the hydrocarbons, it is separated and managed in accordance with NTL-4A. See *Gas Production* above. Pipeline-quality gas can be stored in good quality reservoirs with excellent sealing parameters. This gas is pumped into the reservoir during nonpeak, usually lower priced time periods, and then pumped out into the transmission lines at times of peak demand and good prices. The differential in price pays the governmental storage fees for the use of the reservoir and the injection/compression costs required to store and retrieve the gas. It also serves as a buffer for cold periods when demand is high and levels out the summer slack period of production. Currently, there is one federal gas storage unit agreement within the planning area.

When water is produced with the hydrocarbons, it is separated before the gas is removed. In primary operations, where natural pressures or gravity cause the petroleum in the reservoir to flow to the wellbores, the degree of mixing is high enough to require chemical and heat treatment to separate the oil and water. In secondary production, where water injection or other methods are used to force additional petroleum to the wellbore, the oil and water often are not highly emulsified. In this case, the oil and water can be separated by gravity in a tall settling tank. Produced water can be disposed of through injection into the subsurface, surface evaporation, or beneficial purposes such as water for livestock or irrigation.

Produced water from oil and gas operations is normally disposed of by subsurface injection or in surface pits. Regardless of the method of disposal, it must be acceptable to the BLM, in accordance with the requirements of Onshore Oil and Gas Order No. 7, Disposal of Produced Water (BLM 1993).

The oil is transported to storage tanks through flow lines after separation from any water or gas. Storage tanks are usually located on the lease either at the producing well or at a central production facility. The number and size of tanks are dependent upon the type and amount of production on the lease.

PRIMARY, SECONDARY AND ENHANCED OIL RECOVERY

Primary recovery produces oil, gas, or water using the natural pressure in the reservoir. Well may be stimulated to improve the flow of oil and gas to the borehole. Other techniques include artificial lift, pumping, and gas lift, help extend productive life when a reservoir's natural pressure dissipates. Once the pressure is depleted, the reservoir must either be abandoned or other methods for recovering additional hydrocarbons must be employed.

Gas reservoirs typically have no secondary recovery associated with the recovery of gas. This is because natural gas is produced by expansion resulting from the reduction of reservoir pressure. Typically a high reservoir recovery factor can be expected from this expansion process unless the reservoir is of such low permeability that economics becomes a factor in the recovery efficiency.

Economics is a determining factor because of the expense of operating compression facilities to reduce the reservoir pressure to the minimum. In the planning area, most of the reservoirs are overpressured but have very low permeability. The overpressure allows more gas to be stored but the low permeability limits the recovery to a smaller portion of the area around each well. In rare cases where the gas is very rich and contains a large quantity of entrained liquids, secondary recovery uses inert gases like nitrogen or dry natural gas to keep the reservoir pressure above the condensation point in order to produce the maximum amount of liquids. This secondary recovery process requires sweeping the reservoir with undersaturated gas to entrain and sweep out

the rich gas. After this secondary process is accomplished, especially in dry natural gas secondary recovery operations, the reservoir is depressurized to recover the maximum amount of the remaining gas reserves.

Two basic secondary recovery methods are in use: (1) water flooding, and (2) displacement by gas. The preferred secondary recovery method is water flooding. This process involves injecting water into oil reservoirs to maintain or increase pressure. The process is usually most efficient when the pressure has not fallen to the point where the reservoir is highly saturated with gas. Reservoir heterogeneity in the form of fractures, directional permeability, and thin zones may limit the success of this process.

The process of injecting gas is a less popular secondary recovery technique. Historically, produced gas was considered a waste product and was flared (burned) at the point of production. Later, it was recognized that the energy could be conserved and the recovery of oil increased if the produced gas was reinjected into the reservoir. Increased production was achieved by (1) maintaining reservoir pressure by injecting the gas into the existing gas cap; and (2) injecting the gas directly into the oil-saturated zone, creating an immiscible gas drive that displaced the oil. To achieve miscibility, the reservoir must have reasonably high pressures and temperatures and contain high-gravity oil. Many gas injection projects use the Water and Gas process (i.e., inject water and gas alternately to achieve better contact with the oil within the reservoir). The high price and demand for natural gas has precluded this type of secondary recovery.

The term “enhanced oil recovery” is used to describe recovery processes other than the more traditional secondary recovery procedures. These enhanced recovery methods include thermal, chemical, and miscible (mixable) drives.

Some reservoirs contain large quantities of heavy oil that cannot be produced using normal or secondary methods. These may be stimulated by thermal drive processes in which heat is introduced from the surface or developed in place in the subsurface reservoir. In the surface introduction process, hot water or steam is injected. Raising the temperature of heavy oil reduces the viscosity and makes the oil more mobile. Thermal recovery techniques are not likely to be tried in the planning area because the oils present are not heavy oils. In the in-situ process, both heavy and light oils can be processed. Spontaneous or induced ignition within the reservoir is induced by injected air to develop a fire front that burns the hydrocarbons. Evaporation of the lighter ends immediately ahead of the fire front and later condensation is the primary recovery mechanism. The remaining hydrocarbons are consumed by the fire and are generally not considered of any value. These techniques are very expensive and must have large reserves and thick pay zones to be economical. It is unlikely they will be used within the planning area in the immediate future unless new discoveries are made.

Several chemical drive techniques are currently in use, including (1) polymer flooding, (2) caustic flooding, and (3) surfactant-polymer injection. These methods attempt to change reservoir conditions to allow recovery of additional oil. Caustic and surfactant-polymer flooding have not been economical in the past, and unless a breakthrough in technology is achieved, they will probably not be considered during the planning period. Polymer flooding is an economically viable process but is used mainly in viscous reservoirs with high permeability. No such reservoirs currently exist in the planning area, but future discoveries could be made.

CO2 appears to have the best potential for enhanced and tertiary recovery methods. CO2 is miscible with oil at relatively low pressures and temperatures, and can be used with oil with a wide range of characteristics. CO2 miscibility reduces the oil viscosity and allows much more efficient displacement by water. Usually CO2 is injected via the Water and Gas process in alternating slugs of CO2 and water. Not only does CO2 create miscible flow but it also can displace oil by gravity segregation between the CO2, gas, and oil. This process may allow sequestration of large volumes of the CO2 greenhouse gas in the many applicable reservoirs in the eastern portion of the planning area and recover the last possible oil reserves. Denbury Resources has an active carbon dioxide enhanced oil recovery (EOR) project in the Bell Creek Field of Powder River County. Sequestration of CO2 is advocated as a method to remove the gas from the earth’s atmosphere by storing the gas for geologic time. Carbon dioxide enhanced recovery projects are becoming increasingly used throughout the United States and are receiving attention as ways to also sequester carbon dioxide in geologic formations. Carbon sequestration (often a natural result of carbon dioxide enhanced recovery projects) is also being increasingly studied as it relates to reversing or slowing the anthropogenic effects on climate change.

PLUGGING AND ABANDONMENT

When drilling wells are unsuccessful or production wells are no longer useful, the well is plugged in accordance with Onshore Oil and Gas Order No. 2, equipment is removed from the well site or production facility site, and the site is abandoned in accordance with the approved APD. The wellbore is secured by placing cement plugs to isolate hydrocarbon-producing formations from contaminating other mineral or water bearing formations. Rehabilitation requirements generally are made a part of the APD. Upon completion of abandonment and rehabilitation operations, the lessee or operator notifies the BLM that the location is ready for inspection. Final abandonment will not be approved until the required surface reclamation work has been completed to the satisfaction of the BLM or surface owner. The period of bond liability for the well site is terminated after approval of final abandonment.

INSPECTIONS

Geophysical operations and lease operations are inspected to determine compliance with approved permits, to resolve conflicts or correct problems, and to determine effectiveness and need of lease stipulations. All inspections are documented. Operators are required to correct problems or violations as instructed by the AO. Lease stipulations and permit conditions may be changed or eliminated as a result of an inspection. Lease operation inspections are conducted during site construction, drilling of the well, production, interim and final reclamation phases.

SUBSEQUENT WELL OPERATIONS

Producing wells in active oil and gas fields periodically require repair and workover operations. Even if no new surface disturbance occurs, requests to redrill, deepen, and plug back require prior approval by the field office. Requests to perform other operations such as casing repairs, altering casing, performing non-routine fracturing jobs, recompletion in a different zone, completion of water shutoff, commingling production, or converting to injection or disposal well require the submission of the Sundry Notice and Reports on Wells, BLM Form 3160-5 for prior approval by the AO.

Unless additional surface disturbance is involved, prior approval is not required for routine fracturing or acidizing jobs or recompletion in the same interval when applications conform to standard and prudent operating practices. However, a Sundry Notice must be filed subsequent to these activities.

No prior approval or subsequent report is required for well cleanout work, routine well maintenance, bottom-hole pressure surveys or for repair, replacement, or modification of surface production equipment as long as no additional surface disturbance is involved.

MULTIPLE WELLS FROM A SINGLE WELL PAD

Polling of active operators in North Dakota conducted in May 2010, indicated areas of activity in which development is expected to occur with an average of 1.5 wells per well pad. The areas are locations in which either the Bakken or Three Forks Formation new exploratory oil well development is expected to include some multi-pad (Smart well pad) drilling for either Three Forks or Bakken Formation oil, as well as areas in which existing or new Bakken Formation wells will be co-located with Three Forks Formation wells. It is important to note that since 2010 proposals for multi-well pads have increased and many well pads in parts on North Dakota are likely to be drilled with an average of eight wells per average 1,280 acre spacing unit, but many more will still be single-well pads.

A multi-pad is typically larger in size for drilling and production operations as a result of having multiple wells and possibly production facilities on one well pad. Because the same well pad, pipeline corridor, access road, and production facilities are being used for multiple wells, it reduces the surface disturbance per well. Multi-pad development is a BMP being applied in the planning area on a case-by-case basis to co-locate and reduce surface disturbance for oil wells in areas of Bakken or Three Forks Formations development and CBNG development areas using monobore drilling techniques.

REGULATIONS, LAWS, AND SPECIAL PROCEDURES

UNIT AND COMMUNITIZATION AGREEMENTS

Unit and communitization agreements can be formed in the interest of conservation and to allow for the orderly development of oil and gas reserves.

A unit agreement provides for the recovery of oil and gas from the lands as a single consolidated entity without regard to separate lease ownerships. An exploratory unit is used for the discovery and development of the field in an orderly and efficient manner. Paying and nonpaying well determinations are made for each well drilled. If the well is nonpaying as defined by the agreement, the production is allocated on a lease basis. If the well is a paying unit well, a participating area is formed and the production is allocated to all interest owners in the participating area on the basis of surface area.

A communitization agreement combines two or more leases that otherwise could not be independently developed in conformity with established well-spacing patterns. The leases within the spacing unit share in the costs and benefits of the well drilled in the spacing unit. Therefore, unit and communitization agreements can reduce the amount of damage to the environment and save dollars by eliminating unnecessary wells, roads, pipelines, and lease equipment.

DRAINAGE PROVISIONS

Federal oil and gas leases include a clause that the lessee must protect the leased area from drainage by off-lease wells. If the BLM determines that federal oil or gas is being drained (physically removed) by an off-lease well, the federal lessee will be notified. The lessee has the option of drilling a protective well on lease or paying compensatory royalty for the lost oil or gas. The lessee also has the options of relinquishing the portion of the lease subject to drainage after payment of compensatory royalty for drainage that did occur or submitting data showing that drainage is not occurring.

When federal oil and gas minerals are being drained from unleased federal minerals, the BLM would determine if the unleased federal minerals can be leased in accordance to the land use plan. This will allow a well to be drilled to protect federal royalties from being drained or receive compensatory royalty from drainage. If the unleased federal minerals cannot be leased, the BLM relinquishes all rights to compensatory royalty for the lost oil or gas being drained.

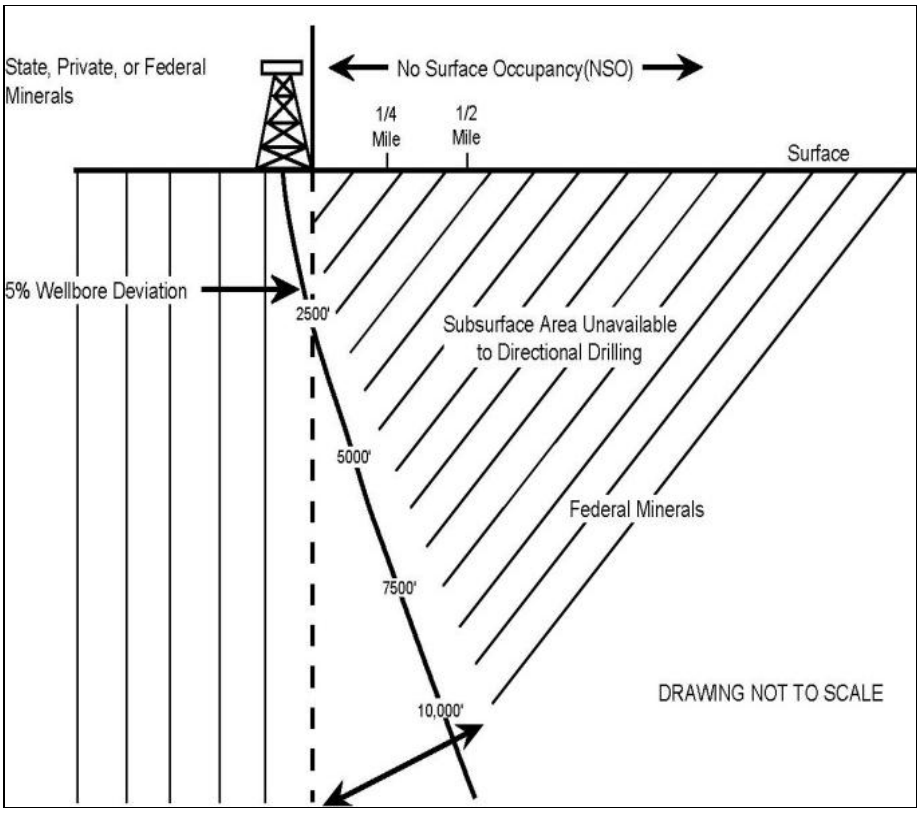
In areas where oil and gas development may conflict with other resources, the areas may be closed to leasing in accordance with decisions made from this document. Regulations at part 43 CFR 3100.0-3(d); the Secretary's general authority to prevent the waste and dissipation of public property; and the Attorney General's Opinion of April 2, 1941 (Vol. 40 Op. Atty. Gen 41) allow the BLM to lease lands that are otherwise unavailable for leasing if oil and gas is being drained from such lands. If the unavailable lands were under the jurisdiction of another agency, leasing of such lands would only occur following consultation, and consent if necessary, from the surface management agency. Unavailable lands for this RMP (see Table 2-5 in Chapter 2) would be leased only if a state or private well is proposed or completed within the same spacing unit, or if the lands are within a unit agreement. These lands would be leased with an NSO stipulation without WEM provisions. There would only be a paper transaction with no physical impacts on the unavailable lands. There would be no exploration or development (drilling or production) within the unavailable lands. After issuance of a lease, the lease would be committed to a communitization agreement or unit agreement and the United States would then receive revenue according to terms of the agreement.

DRILLING ACCESS WITH NSO STIPULATIONS ON OIL LEASES

The NSO stipulations can restrict the development potential of a federal oil and gas lease and can limit the area that can be developed by restricting the amount of surface acreage available for occupancy. NSO restrictions often do not affect access to oil and gas resources unless there are blocks of contiguous land with NSO

stipulations or the drilling depth is presumed to be shallow. The drilling access area is that area under a NSO lease or lease parcel that can be accessed by the wellbore from a surface location outside of the area (Figure 3).

FIGURE 3.
DIRECTIONAL DRILLING ACCESSIBILITY CONCEPT



Source: BLM 1995

Directional drilling can theoretically develop lands near the outer boundary of a lease affected by a NSO stipulation. The BLM cannot assume that a prudent operator would use new technology such as horizontal drilling to access an entire lease area. Although the technology might allow exploration, the expense might make the venture uneconomical. However, the BLM can assume that an operator might be willing to drill wells directionally using equipment and drilling techniques that make the venture economical. For a directionally drilled well, a maximum deviation of approximately 5 degrees is a commonly used rule of thumb for how much a vertical hole can be deviated economically using a standard drilling rig. The BLM has estimated typical oil well depths for various parts of the MCFO based on drilling history and geologic data. Gas wells in this planning area probably cannot and will not be deviated for technical and economic reasons.

A "directional drilling accessibility" concept has been developed for leases affected by NSO stipulations. Shallow wells in Montana (less than 6,000 feet deep) can be deviated up to an eighth of a mile and have the angle of deviation remain reasonably close to 5 degrees. This will place the bottomhole location in the center of a 40-acre tract. Because these wells are commonly spaced on a 40-acre basis, all spacing units within 0.25 miles of the outer boundary of the lease can be tested. Wells between 6,000 and 11,000 feet deep can also be deviated up to 0.25 miles. This will place the bottomhole location of the well the maximum allowable distance from the lease line for a well of this depth. Because these wells are spaced on a 160-acre basis, all spacing units within 0.5 miles of the exterior boundary of the lease can be tested.

The oil wells in Montana, with a total depth greater than 11,000 feet are normally spaced on a 320-acre basis. These wells can be deviated up to 0.25 miles using the above criteria. Using this distance, all spacing units within 0.5 miles of the outer boundaries of an affected lease can be tested. An NSO stipulation has a greater effect in areas of blocked ownership than in scattered tracts because much of the blocked areas remain

inaccessible from off-lease well locations. Usually four-blocked sections with NSO stipulations result in an inaccessible area of 640 acres. The area around the 640 acres would be accessible by directional drilling.

SUBSURFACE AREA ACCESSIBLE TO DRILLING

The angle of approach will result in a bottomhole location below the production horizon. The wellbore deviation concept would allow access to deeper production horizons via directional drilling. Directional drilling will not allow all of the acreage covered by an NSO stipulation to be properly tested under the above conditions. In many cases, the most favorable location in a spacing unit will not be available for testing because it will not be economically or technologically possible to reach it through directional drilling from outside the lease. The best way to economically test a spacing unit is to allow surface occupancy to provide opportunities for vertical wellbores. Because it will be more expensive to explore a tract covered by NSO stipulations, some companies may not offer to lease these lands.

SPLIT ESTATE

Part of the planning area contains lands known as split estate lands. These are lands where the surface ownership is different from the mineral ownership. On split estate lands, the BLM places lease stipulation in accordance to the land use plan and necessary restrictions and requirements or permit COAs in cooperation with the surface owner. The BLM has established policies for the management of federal oil and gas resources in accordance with federal laws and regulations.

Federal laws, regulations, and BLM policy directives give BLM the authority and direction for administering the development of federal oil and gas resources beneath privately owned surface. The BLM does not have the legal authority to regulate how private surface is managed, but does have the statutory authority to require measures by lessees to avoid or minimize adverse impacts that may result from federally authorized mineral lease activities. These measures, in the form of lease stipulations or permit COAs, are intended to protect or preserve the privately owned resources and prevent adverse impacts to adjoining lands, not to dictate management to the surface owner. The resource impacts and mitigation measures are identified in accordance to the NEPA review process. See *Bonding* section above for process and requirements for bonding on privately owned lands.

The term split estate can also refer to lands where the surface ownership is federal and the mineral ownership is private. In this situation, the BLM is the surface owner and works in cooperation with the proponent and the state regulatory agency that approves private mineral applications. The BLM has responsibilities under the previously mentioned statutes; however, it does not have the authority to approve or disapprove the mineral owner's actions. The mineral estate owner usually has the right to enter the land and use the surface that is necessary and reasonable for mineral development through either a reserved or an outstanding right contained in the deed.

UNDESIRABLE EVENTS

Operators of onshore Federal and Indian oil and gas leases shall report all spills, discharges, or other undesirable events in accordance with the requirements of this NTL-MSO-1-92. All such events which occur on State or private land leases within Federally-supervised unit or communitized areas must likewise be reported in accordance with the requirements of the Notice. However, compliance with the Notice does not relieve an operator from the obligation of complying with the applicable rules and regulations of any State or any other Federal agencies regarding notification and reporting of undesirable events. Major undesirable events are defined as those incidents listed below in subsections A through F. These incidents, when occurring on a lease supervised by the BLM, must be reported to the appropriate AO as soon as practical, but within a maximum of 24 hours:

A. Oil, saltwater, and toxic liquid spills, or any combination thereof, which result in the discharge (spilling) of 100 or more barrels of liquid. However, discharges of such magnitude, if entirely

contained within the facility firewall, may be reported only in writing pursuant to Section III of this Notice;
B. Equipment failures or other accidents which result in the venting of 500 or more MCF of gas;
C. Any fire which consumes the volumes as specified in I.A and I.B above;
D. Any spill, venting, or fire, regardless of the volume involved, which occurs in a sensitive area, e.g., areas such as parks, recreation sites, wildlife refuges, lakes, reservoirs, streams, and urban or suburban areas;
E. Each accident which involved a fatal injury; and
F. Every blowout (loss of control of any well) that occurs.

A written report shall be submitted, in duplicate, to the AO no later than 15 days following all major undesirable events identified in Section I. When required by the AO, interim reports will be submitted until final containment and cleanup operations have been accomplished. The final written report for each such event shall, as appropriate, provide:

A. The date and time of occurrence, and the date and time reported to the BLM;
B. The location where the incident occurred, including surface ownership and lease number;
C. The specific nature and cause of the incident;
D. A description of the resultant damage;
E. The action taken and the length of time required for control of the incident, for containing the discharged fluids, and for subsequent cleanup;
F. The estimated volumes discharged and the volumes lost;
G. The cause of death when fatal injuries are involved;
H. Actions that have been or will be taken to prevent a recurrence of the incident;
I. Other Federal or State agencies notified of the incident; and
J. Other pertinent comments or additional information as requested by the AO.

Other-than-major undesirable events, as identified below in subsections A through D, do not have to be reported orally within 24 hours. However, a written report, as required for major undesirable events in Section II of this Notice, must be provided for the following incidents:

A. Oil, saltwater, and toxic liquid spills, or any combination thereof, which result in the discharge (spilling) of at least 10 but less than 100 barrels of liquid in non-sensitive areas, and all discharges of 100 or more barrels when the spill is entirely contained by the facility firewall;
B. Equipment failures or other accidents which result in the venting of at least 50 but less than 500 MCF of gas in non-sensitive areas;
C. Any fire which consumes volumes in the ranges specified in III.A and III.B above; and
D. Each accident involving a major or life-threatening injury.

Spills or discharges in non-sensitive areas involving less than 10 barrels of liquid or 50 MCF of gas do not require an oral or written report. However, the volumes discharged or vented as a result of all such minor incidents must be reported in accordance with Section V of the Notice.

GEOTHERMAL

The BLM has the delegated authority to issue geothermal leases on federal mineral estate, such as that underlying lands administered by the USFS in accordance to 43 CFR 3200. A geothermal lease is for the earth's heat resource where there is federal mineral estate. Leasing geothermal resources by the BLM vests with the lessee a non-exclusive right to future exploration and an exclusive right to produce and use the geothermal resources within the lease area subject to existing laws, regulations, formal orders, and the terms, conditions, and stipulations in or attached to the lease form or included as COAs in permits. Lease issuance alone does not authorize any ground disturbing activities to explore for or develop geothermal resources without site specific approval for the intended operation. Such approval could include additional environmental reviews and permits.

The potential for geothermal resources in the planning area was identified in a Programmatic Environmental Impact Statement (EIS) that amended several RMPs, including Big Dry and Powder River (BLM 2008h). A

more current evaluation of geothermal resources in the 2013 Draft Miles City Draft RMP/EIS recognized the development of geothermal resources as being very limited and likely to not occur with the planning area (See Draft RMP/EIS page 4-264).

Because the development potential for the resource is minimal to non-existent and because there is no quantitative analysis contained in the Draft RMP/EIS, geothermal development is considered but not analyzed in detail in the PRMP/FEIS. Since it is not analyzed in detail in the PRMP/FEIS, any future proposals for geothermal development received will require an amendment in order to consider the proposal. See Chapter 1 under "Planning Process" for discussion on circumstances for amending plans.

LEASE STIPULATIONS

Certain resources in the planning area require protection from impacts associated with oil and gas activities. The specific resource and the method of protection are contained in lease stipulations. Lease stipulations are usually NSO, CSU, or Timing Limitation (Seasonal Restriction). A notice may also be included with a lease to provide guidance regarding resources or land uses.

NO SURFACE OCCUPANCY

Use or occupancy of the surface land for fluid mineral extraction or development is prohibited in order to protect identified resource values. The NSO stipulation includes stipulations which may have been worded as “No Surface Use and Occupancy,” “No Surface Disturbance,” “Conditional No Surface Occupancy” and “Surface Disturbance or Occupancy Restriction (by location).”

CONTROLLED SURFACE USE

Use or occupancy is allowed (unless restricted by another stipulation), but identified resource values require special operational constraints that may modify the lease rights. A CSU stipulation is used for operating guidance, not as a substitute for the NSO or Timing stipulations.

TIMING LIMITATION (SEASONAL RESTRICTION)

Surface use is prohibited during specified times to protect identified resource values. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

LEASE NOTICE

Additional information can be provided to the lessee in the form of a lease notice. This notice does not place restrictions on lease operation, but does provide information about applicable laws and regulations and the requirements for additional information to be supplied by the lessee.

IMPLEMENTATION OF WAIVERS, EXCEPTIONS, OR MODIFICATIONS

To ensure leasing decisions remain appropriate in light of continually changing circumstances and new information, the BLM develops and applies lease stipulation WEM criteria. WEMs provide an effective means of applying adaptive management techniques to multiple use activities to meet changing circumstances in land use planning. The goals and objectives for approval of WEMs are supported either by the NEPA analysis in the RMP planning process or by site-specific environmental review.

- A **waiver** is a permanent exemption from a lease stipulation. The stipulation no longer applies anywhere within the leasehold.

- An **exception** is a one-time exemption for a particular site within the leasehold; exceptions are determined on a case-by-case basis; the stipulation continues to apply to all other sites within the leasehold. An exception is a limited type of waiver.
- A **modification** is a change to the provisions of a lease stipulation, either temporarily or for the term of the lease. Depending on the specific modification, the stipulation may or may not apply to all sites within the leasehold to which the restrictive criteria are applied.

Applying a Waiver, Exception, or Modification to a Stipulation on an Existing Lease or Project

Once the lease or project is issued, the following process is used if:

- the WEM criteria were analyzed and are specified in the RMP;
- the criteria have been met; and
- there is no significant new information bearing on the environmental effects (see BLM H-1790-1, Chapter III, Using Existing Environmental Analysis; and 2007 Onshore Oil and Gas Order Number 1, XI. Waivers, Exceptions, or Modifications [BLM and USFS 2007a]).

The AO generally requires the project proponent to submit a written request for a WEM as well as information demonstrating that:

- the factors leading to the inclusion of the stipulation have changed sufficiently to make the protection provided by the management stipulation no longer justified; or
- the proposed operation would not cause unacceptable impacts. Requests from the operator should contain, at a minimum, a plan (including related on- or off-site mitigation efforts) to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator's request may be included in an APD, NOS, Sundry Notice, or letter. The BLM may also proactively initiate the process.

During the review process, BLM coordination with other state or federal agencies will be undertaken, as appropriate, and documented. For example, it may be appropriate to coordinate the review of wildlife WEMs with the local office of the state wildlife agency. The BLM will also consult with the federal surface management agency (if it is an agency other than the BLM).

In areas where oil and gas development may conflict with other resources, the areas may be closed to leasing in accordance with decisions made from this document. Regulations at part 43 CFR 3100.0-3(d); the Secretary's general authority to prevent the waste and dissipation of public property; and the Attorney General's Opinion of April 2, 1941 (Vol. 40 Op. Atty. Gen 41) allow the BLM to lease lands that are otherwise unavailable for leasing if oil and gas is being drained from such lands. If the unavailable lands were under the jurisdiction of another agency, leasing of such lands would only occur following consultation, and consent if necessary, from the surface management agency.

Unavailable lands for this RMP (see Table 2-1 in Chapter 2) would be leased only if a state or private well is proposed or completed within the same spacing unit, or if the lands are within a unit agreement. These lands would be leased with an NSO stipulation without WEM provisions. There would only be a paper transaction with no physical impacts on the unavailable lands. There would be no exploration or development (drilling or production) within the unavailable lands. After issuance of a lease, the lease would be committed to a communitization agreement or unit agreement and the United States would then receive revenue according to terms of the agreement.

In addition to the resource-specific stipulations under each alternative (e.g., wildlife, recreation), stipulations recommended by the United States Bureau of Reclamation or Army Corps of Engineers would be used on Bureau of Reclamation or Army Corps of Engineers lands (see *Leasing Process and Stipulations*).

The BLM will analyze and document how the WEM is in conformance with the land use plan and identify the plan decision (including goals, objectives, or desired outcomes) supported by the proposed WEM. If existing NEPA analysis does not support the WEM, the BLM must conduct the appropriate environmental review and

NEPA analysis. If the proposed WEM is not in conformance with the land use plan or that document does not disclose the conditions under which such proposed change would be allowed, BLM must either amend the plan or deny the WEM.

The applicant is then provided with a written notification of the decision. Decisions on WEMs are subject to administrative review by the State Director and thereafter may be appealed to the IBLA pursuant to 43 CFR Part 4. However, decisions on WEMs submitted by the operator after drilling has commenced are final for the Department of the Interior and not subject to administrative review by the State Director or appeal pursuant to 43 CFR Part 4.

After the project has commenced, the BLM may consider verbal requests for, and grant verbal approvals of, WEMs. However, the operator must submit a written notice within 7 days following the verbal request. The BLM must also confirm verbal approvals in writing. For minerals, this requirement is provided for in Onshore Oil and Gas Order No. 1 (BLM and USFS 2007a).

Adding, Deleting, or Modifying an Existing Leasing Decision or Stipulation in the Land Use Plan

It may be necessary to add, delete, or modify management stipulations in the RMP as a result of lease parcel reviews, statewide lease stipulation consistency reviews, plan amendments, changed circumstances on the ground, or changed resource protection priorities. This is accomplished and documented through either the plan maintenance or the plan amendment process, which are explained below.

Management stipulations changed through plan maintenance do not generally require public notification. Plan maintenance is easily documented in a RMP Plan Maintenance Tracking Log or other tracking system. Changes made through the more involved RMP amendment process require public notification as part of the plan amendment process. Public review of at least 30 days must also be provided for any waiver or modification of a management stipulation within the RMP that involved an issue of major concern to the public.

The guidance provided in the Land Use Planning Handbook H-1601-1, Section VI (H), Maintenance and Section VII (B), Amendment, further explains how and when management stipulations may be added, deleted, or modified in the RMP.

PUBLIC NOTIFICATION

Public notification (30-day public review) is generally not required for exceptions because exceptions are seldom a substantial modification or waiver of a lease term or management stipulation (43 CFR 3101.1-4), particularly if the exception criteria is outlined in the lease or the land use plan. Public review is not required for waivers or modifications that the AO determines not to be substantial and do not substantially waive or modify the terms of the lease. “Substantial” in this case would include the waiver or modification having a “substantial” effect on the environment that was not previously considered. However, the applicable land use plan may contain additional notification requirements. The public notice, if required, should include identification of the modified lease terms and a description or map of the affected lands.

When public notice is appropriate, the procedures described below may apply.

- For approval of a WEM with the APD, Sundry Notice, or NOI approval:
    - a notice describing the modified lease terms, when required, may be posted for 30 days in the BLM office;
    - posted on the BLM website;
    - posted in a local paper as a legal notice or incorporated into a newspaper article; or
    - the notice may be included as part of the NEPA document’s public review (if the NEPA document is offered for review).

- For approval after the APD, Sundry Notice, or NOI has been approved:

    - public notice, if required, may take the form of a 30-day posting on the BLM website;
    - a legal notice or article in the newspaper; or
    - a notice and associated public review conducted as part of the public review of a NEPA document.

Unless specified in the RMP, it is unlikely public notification would be necessary for approval after project action or mineral drilling has commenced.

The process for adding, deleting, or modifying an existing leasing decision or management stipulation in the land use plan does not usually require a public review if the change occurs through the maintenance; however, the process might include a public review if the change occurs through amendment. The guidance provided in the Land Use Planning Handbook H-1601-1, Section VI (H), Maintenance, and Section VII (B), Amendment, further explains how and when leasing decisions or stipulations may be added, deleted, or modified in the RMP.

PROPOSED STIPULATIONS BY ALTERNATIVE

The following lease stipulations and notices would be included with leases issued in the planning area. This section is organized into Management Common to all Alternatives followed by Alternatives A through E.

MANAGEMENT COMMON TO ALL ALTERNATIVES

NO SURFACE OCCUPANCY

Resource – Makoshika State Park

- Stipulation – Surface occupancy and use is prohibited within Makoshika State Park.
- Objective – To maintain the recreation, visual, sensitive soil, paleontological, and cultural values within the area.
- Exception – None
- Modification – None
- Waiver – None

Resource – Coal

- Stipulation – Surface occupancy and use is prohibited within existing coal leases with approved mining plans.
- Objective – To protect existing coal leases with approved mining plans.
- Exception – An exception may be granted by the AO if the operator submits a plan of operations (PO) that is compatible with existing or planned coal mining operations and approved by all affected parties.
- Modification – The area affected by this stipulation can be modified by the AO if it is determined that portions of the area are not needed for existing or planned mining operations or where mining operations have been completed and the modification is approved by all affected parties.
- Waiver – This stipulation can be waived by the AO if it is determined that all coal lease operations within the leasehold have been completed or the lease is terminated, canceled, or relinquished.

Resource – Visual Resource Management (VRM) Class I

- Stipulation – Surface occupancy and use is prohibited in VRM Class I areas (for example, wild and scenic rivers or WSAs).
- Objective –To preserve the existing character of the landscape.
- Exception – None.
- Modification – None.

- Waiver – None.

Resource – Cultural Areas of Critical Environmental Concern (ACECs)

- Stipulation – Surface occupancy and use is prohibited within designated ACECs, including the Big Sheep Mountain, Hoe, Jordan Bison Kill, Powder River Depot, and Seline cultural ACECs.
- Objective – To protect those cultural properties for which the site or area was designated (including the Big Sheep Mountain, Hoe, Jordan Bison Kill, Powder River Depot, and Seline Cultural ACECs).
- Exception – An exception to this stipulation may be granted by the AO if the lessee or operator submits a plan that demonstrates that the cultural resource values that formed the basis for designation will not be affected or that adverse impacts are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines that portions of the designated site or area can be occupied without adversely affecting the cultural resource values for which the site or area was designated.
- Waiver – This stipulation can be waived if the AO determines that all designated sites or areas within the leasehold can be occupied without adversely affecting the cultural resource values for which such sites or areas were designated or all designated sites or areas within the leasehold are allocated for other uses.

Resource – Paleontological ACECs

- Stipulation – Surface occupancy and use is prohibited within designated paleontological localities (including the Ash Creek Divide, Hell Creek, Sand Arroyo, and Bug Creek ACECs).
- Objective – To protect significant paleontological localities.
- Exception – An exception to this stipulation may be granted by the AO if the lessee or operator submits a plan that demonstrates that the paleontological resource values that formed the basis for designation are not affected or adverse impacts are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines that portions of the designated locality can be occupied without adversely affecting the paleontological resource values for which the locality was designated or the boundaries of the designated locality are changed.
- Waiver – This stipulation can be waived if the AO determines that all designated localities within the leasehold can be occupied without adversely affecting the paleontological resource values for which the localities were designated or all designated localities within the leasehold are allocated for other uses.

Resource – Finger Buttes ACEC

- Stipulation – Surface occupancy and use is prohibited in the Finger Buttes ACEC.
- Objective – To help control the visual impacts of activities and facilities and to help meet the visual quality objectives for the area.
- Exception – An exception to this stipulation may be granted by the AO if the lessee or operator submits a plan where BLM determines the scenic values for which the area was designated are not affected or adverse impacts can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines that portions of designated area can be occupied without adversely affecting the scenic values for which the area was designated.
- Waiver – This stipulation can be waived if the AO determines that areas within the leasehold can be occupied without adversely affecting the scenic values for which the area was designated.

Resource – Smoky Butte ACEC

- Stipulation – Surface occupancy and use is prohibited in the Smoky Butte area.
- Objective – To protect the local and regional scenic values, historic values, and unique geologic values and to protect the special geologic values of the area.

- Exception – An exception to this stipulation may be granted by the AO if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified by the AO if the boundaries of the ACEC are changed.
- Waiver – This stipulation can be waived by the AO if the area can be occupied without adversely affecting the scenic, historic, and cultural values.

LEASE NOTICE

Resource - Cultural Resources and Tribal Consultation

This lease may be found to contain historic properties or resources protected under NHPA, the American Indian Religious Freedom Act (42 U.S.C. 1996), Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 et seq.), Executive Order 13007 (May 24, 1996), or other statutes and executive orders. The BLM will not approve any ground-disturbing activities that may affect any such properties or resources until it completes its obligations (e.g., state historic preservation officer and tribal consultation) under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.

Resource - Cultural Resources

The surface management agency is responsible for assuring that the leased lands are examined to determine if cultural resources are present and to specify mitigation measures. Guidance for application of this requirement can be found in NTL-MSO-85-1. This notice would be consistent with present Montana guidance for cultural resource protection related to oil and gas operations (NTL-MSO-85-1).

Resource – Paleontological Resources

This lease has been identified as being located within geologic units rated as being moderate to very high potential for containing significant paleontological resources. The locations meet the criteria for class 3, 4 and/or 5 as set forth in the Potential Fossil Yield Classification System, WO IM 2008-009, Attachment 2-2. The BLM is responsible for assuring that the leased lands are examined to determine if paleontological resources are present and to specify mitigation measures. Guidance for application of this requirement can be found in WO IM 2008-009 dated October 15, 2007, and WO IM 2009-011 dated October 10, 2008.

Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or project proponent shall contact the BLM to determine if a paleontological resource inventory is required. If an inventory is required, the lessee or project proponent will complete the inventory subject to the following:

- the project proponent must engage the services of a qualified paleontologist, acceptable to the BLM, to conduct the inventory;
- the project proponent will, at a minimum, inventory a 10-acre area or larger to incorporate possible project relocation which may result from environmental or other resource considerations; and
- paleontological inventory may identify resources that may require mitigation to the satisfaction of the BLM as directed by WO IM 2009-011.

Resource – Sprague's Pipit Habitat

The lease area may contain habitat for the federal candidate Sprague’s pipit. The operator may be required to implement specific measures to reduce impacts of oil and gas operations on Sprague’s pipits, their habitat and overall population. Such measures would be developed during the APD and environmental review processes, consistent with lease rights.

If the USFWS lists the Sprague's pipit as threatened or endangered under the ESA, the BLM would enter into formal consultation on proposed permits that may affect the Sprague's pipit and its habitat. Restrictions, modifications, or denial of permits could result from the consultation process.

ALTERNATIVE A

NO SURFACE OCCUPANCY

Resource – Riparian and Water

- Stipulation – Surface occupancy and use is prohibited within riparian areas, 100-year floodplains of major rivers, and on waterbodies and streams.
- Objective – To protect the unique biological and hydrological features associated with riparian areas, 100-year floodplains of major rivers, and waterbodies and streams.
- Exception – An exception to this stipulation may be granted by the AO if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The area affected by this stipulation can be modified by the AO if it is determined that portions of the area do not include riparian areas, floodplains, or waterbodies.
- Waiver – This stipulation can be waived by the AO if it is determined that the entire leasehold does not include riparian areas, floodplains, or waterbodies.

Resource – Grouse Leks

- Stipulation – Surface occupancy and use is prohibited within 0.25 miles of grouse leks.
- Objective – To protect sharp-tailed and sage-grouse lek sites necessary for the long-term maintenance of grouse populations in the area.
- Exception – An exception to this stipulation may be granted by the AO if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines that portions of the area can be occupied without adversely affecting grouse lek sites.
- Waiver – This stipulation can be waived if the AO determines that the entire leasehold can be occupied without adversely affecting grouse lek sites or grouse lek sites within 0.25 miles of the leasehold have not been used for 5 consecutive years.

Resource – Bighorn Sheep Range

- Stipulation – Surface occupancy and use is prohibited in the designated Bighorn Sheep Range.
- Objective – To protect the limited area of bighorn sheep habitat in southeastern Montana.
- Exception – An exception to this stipulation may be granted by the AO if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area may be modified if the AO determines that portions of the area no longer contain bighorn sheep habitat.
- Waiver – This stipulation may be waived if the AO determines that the entire leasehold no longer contains bighorn sheep habitat.

Resource – Bald Eagles

- Stipulation – Surface occupancy and use is prohibited within 0.50 miles of known bald eagle nest sites active within the past 7 years and within bald eagle nesting habitat in riparian areas.
- Objective – To protect bald eagle nesting sites and nesting habitat in accordance with the ESA, the Montana Bald Eagle Management Plan (Montana Bald Eagle Working Group 1994), and the Montana Bald Eagle Management Guidelines: An Addendum to Montana Bald Eagle Management Plan (Montana Bald Eagle Working Group 2010).
- Exception – An exception may be granted by the AO if the operator submits a plan demonstrating that the proposed action will not affect the bald eagle or its habitat. If the AO determines that the action can

affect the bald eagle or its habitat, consultation with the USFWS will be required prior to final determination on the exception.
- Modification – The boundaries of the stipulated area can be modified if the AO, in consultation with the USFWS, determines that portions of the area can be occupied without adversely affecting bald eagle nest sites or nesting habitat.
- Waiver – This stipulation can be waived if the AO, in consultation with the USFWS, determines that the entire leasehold can be occupied without adversely affecting bald eagle nest sites or nesting habitat or the bald eagle is declared recovered and no longer protected under the ESA of 1973.

Resource – Ferruginous Hawk

- Stipulation – Surface occupancy and use is prohibited within 0.50 miles of known ferruginous hawk nest sites active within the past 2 years.
- Objective – To maintain the production potential of ferruginous hawk nest sites. Ferruginous hawks are sensitive to disturbance and have been identified as a Category 2 species under the ESA.
- Exception – An exception to this stipulation may be granted by the AO if the operator submits a plan demonstrating that the impacts from the proposed action will not adversely affect the ferruginous hawk or its habitat. Seasonal exceptions can be allowed from August 1 to March 1 (the non-breeding season) if the AO determines that the proposed activity will not disturb the production potential of ferruginous hawk nest sites.
- Modification – The boundaries of the stipulated area can be modified if the AO determines that portions of the area can be occupied without adversely affecting the production potential of ferruginous hawk nest sites.
- Waiver – This stipulation can be waived if the AO determines that the entire leasehold can be occupied without adversely affecting the production potential of ferruginous hawk nest sites or the ferruginous hawk is downgraded from any protective category.

Resource – Peregrine Falcon

- Stipulation – Surface occupancy and use is prohibited within 1 mile of identified peregrine falcon nesting sites.
- Objective – To protect the habitat of the peregrine falcon, an endangered species under the ESA.
- Exception – An exception may be granted by the AO if the operator submits a plan demonstrating that the proposed action will not affect the piping plover or its habitat. If the AO determines that the action can affect the piping plover or its habitat, consultation with the USFWS will be required prior to final determination on the exception.
- Modification – The boundaries of the stipulated area may be modified if the AO, in consultation with the USFWS, determines that portions of the area are no longer essential to the piping plover.
- Waiver – The stipulation can be waived if the AO, in consultation with the USFWS, determines that the entire leasehold no longer contains habitat essential to the piping plover or the piping plover is declared recovered and no longer protected under the ESA.

Resource – Piping Plover

- Stipulation – Surface occupancy and use is prohibited within 0.25 miles of wetlands identified as piping plover habitat.
- Objective – To protect the habitat of the piping plover, a threatened species under the ESA.
- Exception – An exception may be granted by the AO if the operator submits a plan demonstrating that the proposed action will not affect the piping plover or its habitat. If the AO determines that the action can affect the piping plover or its habitat, consultation with the USFWS will be required prior to final determination on the exception.
- Modification – The boundaries of the stipulated area may be modified if the AO, in consultation with the USFWS, determines that portions of the area are no longer essential to the piping plover.

- Waiver – The stipulation can be waived if the AO, in consultation with the USFWS, determines that the entire leasehold no longer contains habitat essential to the piping plover or the piping plover is declared recovered and no longer protected under the ESA.

Resource – Piping Plover ACEC

- Stipulation – Surface occupancy and use is prohibited in the Piping Plover ACEC.
- Objective – To protect the habitat of the piping plover, a threatened species under the ESA.
- Exception – An exception may be granted by the AO if the operator submits a plan demonstrating that the proposed action will not affect the piping plover or its habitat. If the AO determines that the action may affect the piping plover or its habitat, consultation with the USFWS will be required prior to final determination on the exception.
- Modification – The boundaries of the stipulated area may be modified if the AO, in consultation with USFWS, determines that portions of the area are no longer essential to the piping plover.
- Waiver – The stipulation can be waived if the AO, in consultation with United States Fish and Wildlife Service (USFWS), determines that the entire leasehold no longer contains habitat essential to the piping plover or the piping plover is declared recovered and is no longer protected under the ESA of 1973.

Resource – Interior Least Tern

- Stipulation – Surface occupancy and use is prohibited within 0.25 miles of wetlands identified as least tern habitat.
- Objective – To protect the habitat of the least tern, an endangered species under the ESA.
- Exception – An exception may be granted by the AO if the operator submits a plan demonstrating that the proposed action will not affect the least tern or its habitat. If the AO determines that the action can affect the least tern or its habitat, consultation with the USFWS will be required prior to final determination on the exception.
- Modification – The boundaries of the stipulated area can be modified if the AO, in consultation with the USFWS, determines that portions of the area are no longer essential to the least tern.
- Waiver – The stipulation can be waived if the AO, in consultation with the USFWS, determines that the entire leasehold no longer contains habitat essential to the least tern or the least tern is declared recovered and no longer protected under the ESA.

Resource – Reservoirs with Fisheries

- Stipulation – Surface occupancy and use is prohibited within 0.25 miles of designated reservoirs with fisheries.
- Objective – This stipulation is intended to protect the fisheries and recreational values of reservoirs.
- Exception – An exception to this stipulation may be granted by the AO if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines that portions of the area can be occupied without adversely affecting the fisheries and recreational values of the reservoir.
- Waiver – This stipulation can be waived if the AO determines that the entire leasehold can be occupied without adversely affecting the fisheries and recreational values of the reservoir.

Resource – Recreation

- Stipulation – Surface occupancy and use is prohibited within developed recreation areas and undeveloped recreation areas receiving concentrated public use.
- Objective – To protect developed recreation areas and undeveloped recreation areas receiving concentrated public use.
- Exception – An exception to this stipulation may be granted by the AO if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.

- Modification – The boundaries of the stipulated area can be modified by the AO if the recreation area boundaries are changed
- Waiver – This stipulation can be waived if the AO determines that the entire leasehold no longer contains developed recreation areas or undeveloped recreation areas receiving concentrated public use.

Resource – Cultural Resources

- Stipulation – Surface occupancy and use is prohibited within sites or areas designated for conservation use, public use, or socio-cultural use.
- Objective – To protect those cultural properties (including the Battle Butte Battlefield ACEC and Reynolds Battlefield ACEC) identified for conservation use, public use, and socio-cultural use (see definitions for use categories in BLM Manual 8110.
- Exception – An exception to this stipulation can be granted by the AO if the lessee or operator submits a plan demonstrating that the cultural resource values for which the area was designated are not affected or adverse impacts are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines that portions of the designated site or area can be occupied without adversely affecting the cultural resource values for which the site or area was designated.
- Waiver – This stipulation can be waived if the AO determines that all designated sites or areas within the leasehold can be occupied without adversely affecting the cultural resource values for which such sites or areas were designated, or all designated sites or areas within the leasehold are allocated for other uses.

NOTE: Compliance with Section 106 of NHPA is required for all actions that can affect cultural properties eligible for the NRHP.

Resource – Paleontological Resources

- Stipulation – Surface occupancy and use is prohibited within designated paleontological localities (including the Flat Creek, Garbani, and Harbicht localities).
- Objective – To protect significant paleontological localities.
- Exception – An exception to this stipulation may be granted by the AO if the lessee or operator submits a plan demonstrating that the paleontological resource values forming the basis for designation are not affected or adverse impacts are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines that portions of the designated locality can be occupied without adversely affecting the paleontological resource values for which the locality was designated, or the boundaries of the designated locality are changed.
- Waiver – This stipulation can be waived if the AO determines that all designated localities within the leasehold can be occupied without adversely affecting the paleontological resource values for which the localities were designated, or if all designated localities within the leasehold are allocated for other uses.

CONTROLLED SURFACE USE

Resource – Soils, Slopes

Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface disturbance on slopes over 30 percent, an engineering and reclamation plan must be approved by the AO. The plan must demonstrate how the following will be accomplished:

- site productivity will be restored;
- surface runoff will be adequately controlled;
- off-site areas will be protected from accelerated erosion, such as rilling, gullying, piping, and mass wasting;
- water quality and quantity will be in conformance with state and federal water quality laws;
- surface-disturbing activities will be prohibited during extended wet periods; and

  - construction will be prohibited when soils are frozen.

- Objective – To maintain soil productivity; provide necessary protection to prevent excessive soil erosion on steep slopes; and avoid areas with excessive reclamation problems or those subject to slope failure, mass wasting, or piping.
- Exception – None
- Modification – The area affected by this stipulation can be modified by the AO if it is determined that portions of the area do not include slopes over 30 percent.
- Waiver – This stipulation can be waived by the AO if it is determined that no part of the leasehold includes slopes over 30 percent.

Resource – Potential black-footed ferret habitat (prairie dog colonies and complexes 80 acres or more in size not designated as black-footed ferret reintroduction areas).

- Stipulation – Surface occupancy or use is subject to the following special operating constraints: prior to surface disturbance, prairie dog colonies and complexes 80 acres or more in size will be examined to determine the presence or absence of black-footed ferrets. The findings of this examination may result in some restrictions to the operator's plans or may even preclude use and occupancy. The lessee or operator may, at their own option, conduct an examination to determine the presence or absence of black-footed ferrets. This examination must be done by or under the supervision of a qualified resource specialist approved by the surface management agency. An acceptable report must be provided to the surface management agency documenting the presence or absence of black footed ferrets and identifying the anticipated effects of the proposed action on the black-footed ferret and its habitat.
- Objective – To ensure compliance with the ESA by locating and protecting black-footed ferrets and their habitat.
- Exception – An exception may be granted by the AO for surface-disturbing activities determined to have no adverse effect on black-footed ferrets or black-tailed prairie dogs and their habitats.
- Modification – The boundaries of the stipulated area may be modified by the AO if portions of the leasehold are cleared based on current or past black-footed ferret surveys.
- Waiver – This stipulation may be waived if the black-footed ferret is declared recovered and no longer subject to the ESA or if the entire leasehold is block cleared, permanently cleared based on current or past black-footed ferret surveys, or is no longer black-footed ferret habitat.

Resource – Prairie dog towns within potential black-footed ferret reintroduction areas determined to be essential for black-footed ferret recovery, such as the Black-footed Ferret Reintroduction Area of Environmental Concern (ACEC).

- Stipulation – Surface occupancy and use is subject to the following special operating constraints: the *Draft Guidelines for Oil and Gas Activities in Prairie Dog Ecosystems Managed for Black-footed Ferret Recovery* (USFWS 1990a) will be used to develop site-specific COAs to protect black-footed ferret reintroduction and recovery areas. Specific COAs will depend on type and duration of proposed activity and its proximity to occupied black-footed ferret habitat and other site-specific conditions.
- Objective – To maintain the integrity of designated black-footed ferret reintroduction area habitat for reintroduction and recovery of black-footed ferrets.
- Exception –An exception may be granted by the AO for activities determined, through coordination with the Black-footed Ferret Coordination Committee, to have no adverse impacts on reintroduction and recovery of black-footed ferrets.
- Modification – The boundaries of the stipulated area may be modified if the AO, in coordination with the Black-footed Ferret Coordination Committee, determines that portions of the area are no longer essential for black-footed ferret reintroduction and recovery or a portion of the area no longer contains habitat considered suitable for black-footed ferrets.
- Waiver – This stipulation may be waived if the AO, in coordination with the Montana Black-footed Ferret Committee, determines that the entire leasehold no longer contains habitat essential for reintroduction and recovery of the black-footed ferret or the species is removed from protection under the ESA.

Resource – VRM Class II

- Stipulation – Surface occupancy and use is subject to the following special operating constraints: all surface-disturbing activities and semi-permanent and permanent facilities in VRM Class II areas may require special design, including location, painting, and camouflage, to blend with the natural surroundings and meet the visual quality objectives for the area.
- Objective – To control the visual impacts of activities and facilities within acceptable levels.
- Exception – None
- Modification – None
- Waiver – None

TIMING LIMITATION

Resource – Crucial Winter Range

- Stipulation – Surface use is prohibited within crucial winter range for wildlife during the following time period: December 1 to March 31. This stipulation does not apply to the operation and maintenance of production facilities.
- Objective – To protect white-tailed deer, mule deer, elk, antelope, moose, bighorn sheep, and sage-grouse crucial winter range from disturbance during the winter use season, and to facilitate long-term maintenance of wildlife populations.
- Exception – An exception to this stipulation can be granted by the AO if the operator submits a plan that demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines that portions of the area no longer contain crucial winter range for wildlife. The dates for the timing restriction can be modified if new wildlife use information indicates that the December 1 to March 31 dates are not valid for the leasehold.
- Waiver – This stipulation can be waived if the AO determines that the entire leasehold no longer contains crucial winter range for wildlife.

Resource – Grouse Nesting Zone

- Stipulation – Surface use is prohibited in grouse nesting habitat within 2 miles of a lek during the following time period: from March 1 to June 15. This stipulation does not apply to the operation and maintenance of production facilities.
- Objective – To protect sharp-tailed and sage-grouse nesting habitat from disturbance during spring and early summer in order to maximize annual production of young and to protect nesting activities adjacent to nesting sites for the long-term maintenance of sharp-tailed and sage-grouse populations in the area.
- Exception – An exception to this stipulation may be granted by the AO if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines that portions of the area no longer contain sharp-tailed or sage-grouse nesting habitat within 2 miles of a lek. The dates for the timing restriction can be modified if new information indicates that the March 1 to June 15 dates are not valid for the leasehold.
- Waiver – This stipulation can be waived if the AO determines that the entire leasehold no longer contains sharp-tailed or sage-grouse nesting habitat within 2 miles of a lek.

Resource – Raptor Nests

- Stipulation – Surface use is prohibited within 0.50 miles of raptor nest sites active within the past 2 years during the following time period: from March 1 to August 1. This stipulation does not apply to the operation and maintenance of production facilities.
- Objective – To protect nest sites of raptors that have been identified as species of special concern in Montana.

- Exception – An exception to this stipulation may be granted by the AO if the operator submits a plan demonstrating impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines that portions of the area are no longer within 0.50 miles of raptor nest sites active within the past 2 years. The dates for the timing restrictions can be modified if new information indicates that the March 1 to August 1 dates are not valid for the leasehold.
- Waiver – This stipulation can be waived if the AO determines that the entire leasehold no longer is within 0.50 miles of raptor nest sites active within the past 2 years.

LEASE NOTICE

Resource - Endangered Species Act, Section 7, Consultation

> The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. The BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such species or their habitat. The BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. The BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the ESA, as amended, 16 U.S.C. 1531 et seq., including completion of any required procedure for conference or consultation.

ALTERNATIVE B

NO SURFACE OCCUPANCY

Resource – Soils, Sensitive

- Stipulation – Surface occupancy and use is prohibited on sensitive soils.
- Objective – To maintain the chemical, physical, and biotic properties of soils; maintain soil productivity; provide a recovery mechanism for the entire ecosystem; provide necessary protection to prevent excessive soil degradation; and avoid areas with excessive reclamation problems.
- Exception – None
- Modification – The area affected by this stipulation can be modified by the AO if it is determined that portions of the area do not include sensitive soils.
- Waiver – This stipulation can be waived by the AO if it is determined that no part of the leasehold or area includes sensitive soils.

Resource – Badlands, Rock Outcrop

- Stipulation – Surface occupancy and use is prohibited on badlands and rock outcrop.
- Objective – To prevent excessive soil erosion and to avoid disturbing areas subject to potential reclamation problems.
- Exception – The AO may not grant exceptions to this stipulation.
- Modification – The AO may modify the area affected by this stipulation if it is determined that portions of the leasehold do not include these types of areas.
- Waiver – The AO may waive this stipulation if it is determined that the entire leasehold does not include these types of areas.

Resource – 100-year Floodplains

- Stipulation – Surface occupancy and use is prohibited within 100-year floodplains.

- Objective – To protect the unique biological and hydrological features and functions associated with floodplains.
- Exception – An exception to this stipulation may be granted by the AO if the project initiator submits a plan that demonstrates that no other practicable alternatives exist and the activity can be adequately mitigated. An exception to this stipulation may be granted by the AO if the entire surface-disturbing activity will benefit floodplains.
- Modification – The area affected by this stipulation can be modified by the AO if it is determined that portions of the area do not include floodplains.
- Waiver – This stipulation can be waived by the AO if it is determined that the entire leasehold does not include floodplains.

Resource – Waterbodies and Streams

- Stipulation – Surface occupancy and use is prohibited within waterbodies and streams.
- Objective – To protect water quality and the unique biological and hydrological features and functions associated with waterbodies and streams.
- Exception – An exception to this stipulation may be granted by the AO if the project initiator submits a plan that demonstrates that no other practicable alternatives exist and the activity can be adequately mitigated. An exception to this stipulation may be granted by the AO if the entire surface-disturbing activity will benefit waterbodies and streams.
- Modification – The area affected by this stipulation can be modified by the AO if it is determined that portions of the area do not include waterbodies and streams.
- Waiver – This stipulation can be waived by the AO if it is determined that the entire leasehold does not include floodplains.

Resource – Source Water Protection Areas

- Stipulation – Surface occupancy and use is prohibited within State-designated Source Water Protection Areas.
- Objective – To protect human health by minimizing the potential contamination of public water systems. Source water is untreated water from streams, rivers, lakes, or aquifers used to supply public water systems. Ensuring that source water is protected from contamination can reduce the costs of treatment and risks to human health. This stipulation would protect the State-designated Source Water Protection Areas that protect public water systems from potential contamination.
- Exception – The AO may not grant exceptions to this stipulation.
- Modification – The AO may modify the boundaries of the stipulated area if it is determined that portions of the leasehold do not include Source Water Protection Areas.
- Waiver – The AO may waive this stipulation if it is determined that the entire leasehold does not include Source Water Protection Areas.

Resource – Big Game Crucial Winter Range

- Stipulation – Surface occupancy and use is prohibited in crucial winter range.
- Objective – To facilitate long-term maintenance of wildlife populations and protect white-tailed deer, mule deer, elk, and antelope crucial winter ranges from disturbance during the winter use season.
- Exception – An exception to this stipulation may be granted by the AO if the project proponent submits a plan demonstrating impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines portions of the area no longer contain crucial winter range.
- Waiver – This stipulation can be waived if the AO determines the entire leasehold no longer contains crucial winter range.

Resource – Bighorn Sheep Habitat

- Stipulation – Surface occupancy and use is prohibited in bighorn sheep habitat.
- Objective – To protect bighorn sheep habitat in southeastern Montana.
- Exception – An exception to this stipulation may be granted by the AO if the project proponent submits a plan demonstrating impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area may be modified if the AO determines portions of the area no longer contain bighorn sheep habitat.
- Waiver – This stipulation may be waived if the AO determines the entire leasehold no longer contains bighorn sheep habitat.

Resource –Raptor Nest Sites

- Stipulation – Surface occupancy and use is prohibited in and within 0.50 miles of raptor nest sites active within the past 7 years.
- Objective – To protect nest sites of burrowing owl golden eagle, Ferruginous hawk, Swainson's hawk, prairie falcon, and northern goshawk.
- Exception – An exception may be granted by the AO if the project proponent submits a plan demonstrating impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines portions of the leasehold are no longer within 0.50 miles of raptor nest sites active within the past 7 years.
- Waiver – This stipulation can be waived if the AO determines the entire leasehold is no longer within 0.50 miles of raptor nest sites active within the past 7 years.

Resource – Bald Eagles

- Stipulation - Surface occupancy and use is prohibited within 0.50 mile of bald eagle nest sites active within the preceding 5 years.
- Objective – To protect nest sites and nesting activities of bald eagles, BLM priority species for management.
- Exception – The AO may grant an exception, subject to coordination with the USFWS, if the action will not to result in nest territory abandonment.
- Modification – The AO may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.50 mile of bald eagle nest sites active within the past 5 years.
- Waiver – The AO may waive this stipulation if the entire leasehold is no longer within 0.50 mile of bald eagle nest sites active within the past 5 years or if the habitat has been altered to an extent, future use by nesting bald eagles is unlikely.

Resource – Piping Plover Habitat

- Stipulation – Surface occupancy and use is prohibited in and within 0.25 miles piping plover habitat.
- Objective – To protect the habitat of the piping plover, a threatened species under the ESA.
- Exception – An exception may be granted by the AO if the project proponent submits a plan demonstrating the proposed action will not affect the piping plover or its habitat. If the AO determines the action may affect the piping plover or its habitat, consultation with the USFWS will be required prior to final determination on the exception.
- Modification – The boundaries of the stipulated area may be modified if the AO, in consultation with the USFWS, determines portions of the area are no longer within 0.25 mile of piping plover habitat.
- Waiver – The stipulation can be waived if the AO, in consultation with the USFWS, determines the entire leasehold is no longer within 0.25 mile of piping plover habitat.

Resource – Interior Least Tern Habitat

- Stipulation – Surface occupancy and use is prohibited in and within 0.25 mile least tern habitat.

- Objective – To protect the habitat of the least tern, an endangered species under the ESA.
- Exception – An exception may be granted by the AO if the project proponent submits a plan demonstrating the proposed action will not affect the least tern or its habitat. If the AO determines the action may affect the least tern or its habitat, consultation with the USFWS will be required prior to final determination on the exception.
- Modification – The boundaries of the stipulated area can be modified if the AO, in consultation with the USFWS, determines portions of the area are no longer within 0.25 miles of least tern habitat.
- Waiver – The stipulation can be waived if the AO, in consultation with the USFWS, determines the entire leasehold is no longer within 0.25 mile of least tern habitat.

Resource – Black-tailed Prairie Dogs

- Stipulation – In the absence of black-footed ferrets, surface occupancy and use is prohibited in and within 0.50 mile of prairie dog colonies.
- Objective – To protect prairie dogs, burrowing owls, mountain plover, and other associated species that utilize prairie dog towns for nesting and breeding habitats.
- Exception – An exception may be granted by the AO for activities not detrimental to the prairie dog, associated species, or their habitats.
- Modification – The boundaries of the stipulated area may be modified if the AO determines portions of the area are not within 0.50 mile of prairie dog habitat.
- Waiver – The stipulation may be waived if:
    - the AO determines the entire leasehold is not within 0.50 mile of prairie dog colonies;
    - the habitat is not likely to be reoccupied; or
    - the prairie dog habitat occurs on surfaces managed by an entity other than the BLM, the surface owner requests the activity take place on the prairie dog town, and threatened or endangered species will not be negatively affected through this action.

Resource – Black-footed Ferrets

- Stipulation - Surface occupancy and use is prohibited within 0.25 mile of black-footed ferret habitat (complex of prairie dog towns within 1.5 km of each other comprising a total of at least 1,500 acres).
- Objective – To protect habitat for the federally endangered black-footed ferret.
- Exception – The AO, subject to consultation with the USFWS, may grant an exception if the action will not impair the function or suitability of the black-footed ferret habitat.
- Modification - The AO, subject to confirmation from the USFWS, may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.25 mile of current or potential black-footed ferret habitat.
- Waiver – The AO, subject to consultation with the USFWS, may waive this stipulation, if the entire leasehold is no longer within 0.25 mile of current or potential black-footed ferret habitat.

Resource – Pallid Sturgeon Habitat

- Stipulation – Surface occupancy and use is prohibited in and within 0.50 mile of river and stream centerline identified as pallid sturgeon habitat.
- Objective – To protect the habitat of the pallid sturgeon, an endangered species under the ESA.
- Exception – An exception may be granted by the AO if the project proponent submits a plan demonstrating the proposed action will not affect the pallid sturgeon or its habitat. If the AO determines the action may affect the pallid sturgeon or its habitat, consultation with the USFWS will be required prior to final determination on the exception.
- Modification – The boundaries of the stipulated area may be modified if the AO, in consultation with the USFWS, determines portions of the area are no longer within 0.50 mile of pallid sturgeon habitat.
- Waiver – The stipulation can be waived if the AO, in consultation with the USFWS, determines the entire leasehold is no longer within 0.50 mile pallid sturgeon habitat.

Resource – Sage-grouse Habitat – Restoration Areas

- Stipulation – Surface occupancy and use is prohibited within 1 mile of a lek in sections that contain 3 or fewer wells.
- Objective – To maintain integrity of the existing sage-grouse habitat and maximize restoration efforts while allowing for the permitted uses.
- Exception – An exception to this stipulated area may be granted, if the AO, in consultation with MFWP, determines portions of the area can be occupied without adversely affecting sage grouse populations or if the operator submits a plan that demonstrates impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area may be modified if the AO, in consultation with MFWP, determines portions of the leasehold are no longer sage grouse habitat or the leasehold is not within 1 mile of a lek.
- Waiver – The stipulation may be waived if the AO, in consultation with MFWP, determines the entire leasehold is no longer sage-grouse habitat, or the leasehold is not within 1 mile of a lek, or sage grouse are no longer a BLM special status species.

Resource – Designated Sport-fish Reservoirs

- Stipulation – Surface occupancy and use is prohibited in and within 0.50 mile of designated sport-fish reservoirs.
- Objective – To protect ecosystem functionality, fisheries, and recreational values of sport-fish reservoirs.
- Exception – An exception to this stipulation may be granted by the AO if the authorized activity will not compromise the fisheries habitat or recreational experience of those using the reservoir.
- Modification – The boundaries of the stipulated area may be modified if the AO determines portions of the leasehold no longer are within 0.50 mile of sport-fish reservoirs.
- Waiver – This stipulation may be waived if the AO determines that the reservoir is no longer capable of supporting a sport fishery.

Resource – Lands with Wilderness Characteristics

- Stipulation: Surface occupancy and use is prohibited within areas that are managed to protect wilderness characteristics.
- Objective: To protect wilderness characteristics as a priority over other multiple uses.
- Exception: None
- Modification: None
- Waiver: None

Resource – Recreation

- Stipulation – Surface occupancy and use is prohibited within developed recreation areas and undeveloped recreation areas receiving concentrated public use.
- Objective – To protect developed recreation areas and undeveloped recreation areas receiving concentrated public use.
- Exception – An exception to this stipulation may be granted by the AO if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified by the AO if the recreation area boundaries are changed.
- Waiver – This stipulation can be waived if the AO determines that the entire leasehold no longer contains developed recreation areas or undeveloped recreation areas receiving concentrated public use.

Resource – Cultural Resources, NRHP-eligible Properties and Districts, and Traditional Cultural Properties (TCPs)

- Stipulation – Surface occupancy and use is prohibited in site boundaries and within 0.50 mile of the boundaries of:

    - sites or areas designated or sites or areas that meet the criteria for allocation for designation for scientific use, conservation use, traditional use (socio-cultural use), public use, and experimental use;
    - the boundaries of sites or districts eligible for or included on the NRHP;
    - the boundaries of TCPs, or sites or areas designated as such, or sites or areas that meet the criteria for allocation for designation for traditional use (socio-cultural use); or
    - the boundaries of TCPs; sites designated for traditional use; or cultural properties determined to be of particular importance to American Indian groups. (Such properties include, but are not limited, to burial locations, pictograph and petroglyph sites, vision quest locations, plant-gathering locations, and areas considered sacred or used for religious purposes.)

- Objective – To protect and avoid disturbance and inadvertent impacts to significant cultural properties, districts, and their settings; NRHP-eligible properties and districts; TCPs or those designated for traditional use and the settings in which they occur; and those properties determined to be of particular importance to American Indian groups.
- Exception – An exception to this stipulation may be granted by the AO if the lessee or project proponent submits a plan demonstrating that:

    - adverse impacts or effects to the cultural property can be avoided by project redesign or relocation within the 0.50-mile buffer area; and
    - the project is located so that it and any associated surface disturbance will not alter the characteristics of the cultural or historic property by diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association, and so that there will be no destruction, damage, or alteration to all or part of the cultural resource's visual, atmospheric, or audible elements that could diminish the integrity of the property's significant historic features (e.g., project placed behind a hill or screened from view or by some other method within the 0.50-mile buffer area).

- Modification – None
- Waiver – None

Resource – Paleontological Resources

- Stipulation – Surface occupancy and use is prohibited in and within 0.50 mile of significant paleontological localities or localities that meet the criteria for significant as such.
- Objective – To preserve and protect significant vertebrate fossils and paleontological localities.
- Exception – An exception to this stipulation may be granted by the AO if the lessee or project proponent submits a plan demonstrating that:

    - adverse impacts to the paleontological resource can be avoided by project redesign or relocation within the 0.50-mile buffer area; and
    - the project is located so that it and any associated surface disturbance will not alter the characteristics of the paleontological resource that designate it significant by diminishing the integrity of the resource's location, setting, or association; and without causing any destruction, damage, or alteration to all or part of the paleontological resource.

- Modification – None
- Waiver – None

CONTROLLED SURFACE USE

Resource – Air Resources

- Stipulation – Surface occupancy and use is subject to the requirement that each diesel-fueled non-road engine with greater than 200 horsepower design rating to be used during drilling or completion activities meets one of the following two criteria: (1) the engine was manufactured to meet USEPA nitrogen oxide (NO_x) emission standards for Tier 4 non-road diesel engines, or (2) the engine emits NO_x at rates less than or equal to USEPA emission standards for Tier 4 non-road diesel engines.
- Objective – To protect air resources and meet the 1-hour nitrogen dioxide (NO_2) National Ambient Air Quality Standard (NAAQS).
- Exception – An exception may be granted by the AO if air quality modeling, air quality monitoring, or other information demonstrates compliance with the NO_2 NAAQS.
- Modification – This stipulation may be modified if the USEPA or the MDEQ adds, deletes, or revises NO_x emission standards for drill rig, completion rig, or non-road engines.
- Waiver – The stipulation may be waived if new information demonstrates that compliance with the NO_2 NAAQS will be achieved consistently throughout the lease area. The stipulation may also be waived if the NO_2 NAAQS is revoked or otherwise rendered inapplicable to drilling/completion operations.

Resource – Sharp-tailed Grouse Leks and Nesting Habitat

- Stipulation – Surface occupancy and use is allowed within 4 miles of sharp-tailed grouse leks with design features to maintain the functionality of sharp-tailed grouse nesting habitat and lek sites.
- Objective – To maintain the functionality of sharp-tailed grouse nesting habitat and lek sites.
- Exception – The AO may grant an exception if the action will not to result in nest abandonment or decrease productivity, by substantially interfering with normal breeding, nesting, feeding, or brooding behavior.
- Modification – The AO may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 4 miles of a sharp-tailed grouse lek.
- Waiver – The AO may waive this stipulation if the entire leasehold is no longer within 4 mile of a sharp-tailed grouse lek.

Resource – Sage-grouse Habitat – General Habitat Areas

- Stipulation – Surface occupancy and use is allowed within 4 miles of leks with design features to maintain the functionality of sage-grouse habitat.
- Objective – To maintain sage-grouse habitat functionality.
- Exception – The AO may grant an exception if the action, as proposed or stipulated, will meet the goals and objectives for sage-grouse habitat and will not compromise the long-term functionality of habitat.
- Modification – The AO may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 4 miles of a lek.
- Waiver – This stipulation may be waived, if:

    - in consultation with MFWP, it is determined the lease area has been altered and there is no reasonable likelihood of functional habitat being restored; or
    - the entire leasehold is no longer within 4 miles of a lek; or
    - sage-grouse are no longer a BLM Special Status Species.

Resource – Sage-grouse Habitat –Restoration Areas

- Stipulation – Surface occupancy and use is allowed within 1 mile of leks in sections that contain 4 or more wells with design features to maintain the functionality of sage-grouse habitat.
- Objective – To maintain sage-grouse habitat functionality.

- Exception – The AO may grant an exception if the action, as proposed or stipulated, will meet the goals and objectives for sage-grouse habitat and will not compromise the long-term functionality of habitat.
- Modification – The AO may modify the boundaries of the stipulated area if a portion of the lease area is determined not to be sage-grouse habitat or is not within 1 mile of a lek.
- Waiver – This stipulation may be waived, if:
    - in consultation with MFWP, it is determined the lease area has been altered and there is no reasonable likelihood of functional habitat being restored; or
    - the entire lease area is no longer within 1 mile of a lek; or
    - sage-grouse are no longer a BLM Special Status Species.

Resource – VRM Classes II

- Stipulation – In order to retain the existing character of the landscape (VRM Class II Objective), oil and gas development activities will be located, designed, constructed, operated, and reclaimed within 2 years from initiation of construction so that activities should not attract attention of the casual observer. This stipulation does not apply to operation and maintenance activities.
- Objective – To protect visual resource values while allowing energy development and related activities to occur which have been mitigated to retain the existing character of the landscape.
- Exception – None
- Modification – None
- Waiver – None

LEASE NOTICE

Resource - Air Resource Analysis

The lessee/operator is given notice that prior to project-specific approval, additional air resource analyses may be required in order to comply with the NEPA, FLPMA, and/or other applicable laws and regulations. Analyses may include equipment and operations information, emission inventory development, dispersion modeling or photochemical grid modeling for air quality and/or air quality related value impact analysis, and/or emission control determinations. These analyses may result in the imposition of additional project-specific control measures to protect air resources.

Resource - Special Status Species

The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or requirements of the ESA as amended, 16 U.S.C. § et seq., including completion of any required procedure for conference or consultation.

Resource - Migratory Bird Treaty Act

The Operator is responsible for compliance with provisions of the Act by implementing one of the following measures; a) avoidance by timing; ground disturbing activities will not occur from April 15 to July 15, b) habitat manipulation; render proposed project footprints unsuitable for nesting prior to the arrival of migratory birds (blading or pre-clearing of vegetation must occur prior to April 15 within the year and area scheduled for activities between April 15 and July 15 of that year to deter nesting, or c) survey-buffer-monitor; surveys will be conducted by a BLM approved biologist within the area of the proposed action and a 300 foot buffer from

the proposed project footprint between April 15 to July 15 if activities are proposed within this timeframe. If nesting birds are found, activities would not be allowed within 0.1 miles of nests until after the birds have fledged. If active nests are not found, construction activities must occur within 7 days of the survey. If this does not occur, new surveys must be conducted. Survey reports will be submitted to the appropriate BLM Office.

Resource - Black-footer Ferret Surveys

Surface occupancy or use is subject to the following special operating constraints: prior to surface disturbance, prairie dog colonies and complexes 80 acres or more in size will be examined to determine the presence or absence of black-footed ferrets. The findings of this examination may result in some restrictions to the operator's plans or may even preclude use and occupancy. The lessee or operator may, at their own option, conduct an examination to determine the presence or absence of black-footed ferrets. This examination must be done by or under the supervision of a qualified resource specialist approved by the surface management agency. An acceptable report must be provided to the surface management agency documenting the presence or absence of black footed ferrets and identifying the anticipated effects of the proposed action on the black-footed ferret and its habitat.

ALTERNATIVE C

NO SURFACE OCCUPANCY

Resource – Bald Eagles

- Stipulation - Surface occupancy and use is prohibited within 0.50 mile of bald eagle nest sites active within the preceding 5 years.
- Objective – To protect nest sites and nesting activities of bald eagles, BLM priority species for management.
- Exception – The AO may grant an exception, subject to coordination with the USFWS, if the action will not to result in nest territory abandonment.
- Modification – The AO may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.50 mile of bald eagle nest sites active within the past 5 years.
- Waiver – The AO may waive this stipulation if the entire leasehold is no longer within 0.50 mile of bald eagle nest sites active within the past 5 years or if the habitat has been altered to an extent, future use by nesting bald eagles is unlikely.

Resource – Black-footed Ferrets

- Stipulation - Surface occupancy and use is prohibited within 0.25 mile of black-footed ferret habitat (complex of prairie dog towns within 1.5 km of each other comprising a total of at least 1,500 acres).
- Objective – To protect habitat for the federally endangered black-footed ferret.
- Exception – The AO, subject to consultation with the USFWS, may grant an exception if the action will not impair the function or suitability of the black-footed ferret habitat.
- Modification - The AO, subject to confirmation from the USFWS, may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.25 mile of current or potential black-footed ferret habitat.
- Waiver – The AO, subject to consultation with the USFWS, may waive this stipulation, if the entire leasehold is no longer within 0.25 mile of current or potential black-footed ferret habitat.

Resource – Black-tailed Prairie Dogs

- Stipulation – In the absence of black-footed ferrets, surface occupancy and use is prohibited in and within 0.25 mile of black-tailed prairie dog colonies.
- Objective – To protect black-tailed prairie dogs, burrowing owls, mountain plover, and other associated species that utilize prairie dog towns for nesting and breeding habitats.

- Exception – An exception may be granted by the AO for activities not detrimental to the prairie dog or associated species or their habitats.
- Modification – The boundaries of the stipulated area may be modified if the AO determines portions of the leasehold are not within 0.25 mile of prairie dog habitat.
- Waiver – The stipulation may be waived if:

    - the AO determines the entire leasehold is no longer 0.25 mile of prairie dog habitat;
    - the habitat is not likely to be reoccupied; or
    - the prairie dog habitat occurs on surfaces managed by an entity other than the BLM, the surface owner requests the activity take place on the prairie dog town, and threatened or endangered species will not be negatively impacted through this action.

Resource – Pallid Sturgeon Habitat

- Stipulation – Surface occupancy and use is prohibited in and within 0.50 mile of river and stream centerline identified as pallid sturgeon habitat.
- Objective – To protect the habitat of the pallid sturgeon, an endangered species under the ESA.
- Exception – An exception may be granted by the AO if the project proponent submits a plan demonstrating the proposed action will not affect the pallid sturgeon or its habitat. If the AO determines the action may affect the pallid sturgeon or its habitat, consultation with the USFWS will be required prior to final determination on the exception.
- Modification – The boundaries of the stipulated area may be modified if the AO, in consultation with the USFWS, determines portions of the area are no longer within 0.50 mile of pallid sturgeon habitat.
- Waiver – The stipulation can be waived if the AO, in consultation with the USFWS, determines the entire leasehold is no longer within 0.50 mile pallid sturgeon habitat.

Resource – Designated Sport-fish Reservoirs

- Stipulation – Surface occupancy and use is prohibited in and within 0.25 mile of sport-fish reservoirs.
- Objective – To protect ecosystem functionality, fisheries, and recreational values of sport-fish reservoirs.
- Exception – An exception may be granted by the AO if the authorized activity will not compromise the fisheries habitat or recreational experience of those using the reservoir.
- Modification – The boundaries of the stipulated area may be modified if the AO determines portions of the leasehold are no longer within 0.25 mile of sport-fish reservoirs.
- Waiver – This stipulation may be waived if the AO determines the reservoir is no longer capable of supporting a sport fishery.

Resource – Recreation

- Stipulation – Surface occupancy and use is prohibited within developed recreation areas and undeveloped recreation areas receiving concentrated public use.
- Objective – To protect developed recreation areas and undeveloped recreation areas receiving concentrated public use.
- Exception – An exception may be granted by the AO if the project proponent submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified by the AO if the recreation area boundaries are changed.
- Waiver – This stipulation can be waived if the AO determines that the entire leasehold or area no longer contains developed recreation areas or undeveloped recreation areas receiving concentrated public use.

Resource – National Historic Trails

- Stipulation: Surface occupancy and use is prohibited within the National Trail Management Corridor of designated National Historic Trails. Designated National Historic Trails include the Lewis and Clark Trail and the Nez Perce Trail.
- Objective: To protect the nature and purpose; trail resources, qualities, values, and associated settings; and primary use or uses of the historic trail, in accordance with National Trail System Act.
- Exception: An exception to this stipulation may be granted by the AO if the lessee or project proponent completes a comprehensive trail inventory, as outlined in Manual 6280, and presents a proposal which demonstrates resource values are not affected or that adverse impacts can be adequately mitigated to prevent impact to:

    - The nature and purposes of the National Trail.
    - National Trail resources, qualities, values, and associated settings.
    - National Trail primary use or uses.
    - The National Trail from the cumulative or trail-wide perspective.

- Modification: None
- Waiver: None

Resource – Cultural Resources, NRHP-eligible Properties and Districts, and TCPs

- Stipulation – Surface occupancy and use is prohibited in and within 300 feet of the boundaries of:

    - sites or areas designated or sites or areas that meet the criteria for allocation for designation for scientific use, conservation use, traditional use (socio-cultural use), public use, and experimental use;
    - the boundaries of sites or districts eligible for or included on the NRHP; and
    - the boundaries of TCPs, or sites or areas designated, or sites or areas that meet the criteria for allocation for designation for traditional use (socio-cultural use) if an associated surface-disturbing activity would impact or have an effect on the quality and setting of the site or area. Activity is prohibited in or within 300 feet of the boundaries of cultural properties determined to be of particular importance to American Indian groups, TCPs, or sites designated for traditional use. (Such properties include, but are not limited to, burial locations, pictograph and petroglyph sites, vision quest locations, plant-gathering locations, and areas considered sacred or used for religious purposes.)

- Objective – To protect and avoid disturbance and inadvertent impacts to significant cultural properties, districts, and their settings; NRHP-eligible properties and districts; and those properties determined to be of particular importance to American Indian groups, designated TCPs, or those designated for traditional use and the settings in which they occur.
- Exception – An exception to this stipulation may be granted by the AO if the conditions described below are met.

    - The lessee or project proponent submits a plan demonstrating that adverse impacts or effects to the cultural property can be avoided by project redesign or relocation within the buffer area.
    - The project is located so that it and any associated surface disturbance will not alter the characteristics of the cultural or historic property by diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association; or so that there will be no destruction, damage, or alteration to all or part of the cultural resource’s visual, atmospheric, or audible elements that could diminish the integrity of the property's significant historic features (e.g., project placed behind a hill or screened from view or by some other method within the buffer area).

    - The lessee or project proponent submits a plan demonstrating that the adverse impacts to cultural properties can be mitigated through data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the BLM, surface occupancy in the area will be prohibited.
    - The lessee or operator submits a plan demonstrating that operations will be designed or located in such a manner as to have a minimal impact to the natural setting and characteristics of the immediate area and demonstrating that adverse impacts to TCPs can be mitigated in consultation with, and to the satisfaction of, affected American Indian Tribes or American Indian groups.

- Modification – None
- Waiver – None

Resource – National Historic Landmarks (NHLs) and Historic Battlefields

- Stipulation – Surface occupancy and use is prohibited within the visible area within a 3.5-mile radius of the Fort Union Historic Site NHL and a 300 feet radius of the boundaries of NHLs and historic battlefields.
- Objective – To protect NHLs and historic sites eligible for the NRHP and the setting or viewshed in which they occur.
- Exception – An exception to this stipulation may be granted by the AO if the conditions described below are met.

    - The lessee or project proponent submits a plan demonstrating that adverse impacts or effects to the cultural property can be avoided by project redesign or relocation within the buffer area; or the project is located so that it and any associated surface disturbance will not alter the characteristics of the cultural or historic property by diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association; or so that there will be no destruction, damage, or alteration to all or part of the cultural resource's visual, atmospheric, or audible elements that could diminish the integrity of the property's significant historic features (e.g., project placed behind a hill or screened from view or by some other method within the buffer area).
    - The lessee or project proponent submits a plan demonstrating that the adverse impacts to cultural properties can be mitigated through data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the BLM, surface occupancy in the area will be prohibited.

- Modification – None
- Waiver – None

Resource – Paleontological Resources

- Stipulation – Surface occupancy and use is prohibited in and within 300 feet of significant paleontological localities or localities that meet the criteria for significance as such.
- Objective – To preserve and protect significant vertebrate fossils and paleontological localities.
- Exception – An exception may be granted by the AO if the lessee or project proponent submits a plan demonstrating that the adverse impacts paleontological localities can be mitigated through data recovery and extensive recordation. Where impacts to paleontological resources cannot be mitigated to the satisfaction of the BLM, surface occupancy on that area will be prohibited.
- Modification – None
- Waiver – None

Resource – Battle Butte Battlefield, Reynolds Battlefield, Cedar Creek Battlefield, Flat Creek Paleontological Area, Long Medicine Wheel, Walstein, and Yonkee ACECs

- Stipulation – Surface occupancy and use is prohibited in site boundaries and within 0.5 miles of the boundaries of:

    - sites or areas designated or sites or areas that meet the criteria for allocation for designation for scientific use, conservation use, traditional use (socio-cultural use), public use, and experimental use;
    - the boundaries of sites or districts eligible for or included on the NRHP;
    - the boundaries of TCPs, or sites or areas designated as such, or sites or areas that meet the criteria for allocation for designation for traditional use (socio-cultural use); or
    - the boundaries of TCPs, sites designated for traditional use, or cultural properties determined to be of particular importance to American Indian groups. (Such properties include, but are not limited to, burial locations, pictograph and petroglyph sites, vision quest locations, plant-gathering locations, and areas considered sacred or used for religious purposes.)

- Objective – To protect and avoid disturbance and inadvertent impacts to significant cultural properties, districts, and their settings; NRHP-eligible properties and districts; TCPs or those designated for traditional use and the settings in which they occur; and those properties determined to be of particular importance to American Indian groups.
- Exception – An exception to this stipulation may be granted by the AO if the lessee or project proponent submits a plan demonstrating that:

    - adverse impacts or effects to the cultural property can be avoided by project redesign or relocation within the 0.5-mile buffer area; and
    - the project is located so that it and any associated surface disturbance will not alter the characteristics of the cultural or historic property by diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association, and so that there will be no destruction, damage, or alteration to all or part of the cultural resource's visual, atmospheric, or audible elements that could diminish the integrity of the property's significant historic features (e.g., project placed behind a hill or screened from view or by some other method within the 0.5-mile buffer area).

- Modification – None
- Waiver – None

Resource – Powderville ACEC

- Stipulation – Surface occupancy and use is prohibited within significant paleontological localities.
- Objective – To protect significant paleontological localities.
- Exception – An exception to this stipulation may be granted by the AO if the lessee or operator submits a plan demonstrating that the paleontological resource values forming the basis for designation are not affected or adverse impacts are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines that portions of the designated locality can be occupied without adversely affecting the paleontological resource values for which the locality was designated or the boundaries of the designated locality are changed.
- Waiver – This stipulation can be waived if the AO determines that all significant localities within the leasehold can be occupied without adversely affecting the paleontological resource values for which the localities were designated or all designated localities within the leasehold are allocated for other uses.

CONTROLLED SURFACE USE

Resource – Air Resources

- Stipulation – Surface occupancy and use is subject to the requirement that each diesel-fueled non-road engine with greater than 200 horsepower design rating to be used during drilling or completion activities meets one of the following two criteria: (1) the engine was manufactured to meet USEPA NO_x emission standards for Tier 4 non-road diesel engines, or (2) the engine emits NO_x at rates less than or equal to USEPA emission standards for Tier 4 non-road diesel engines.
- Objective – To protect air resources and meet the 1-hour NO_2 NAAQS.
- Exception – An exception may be granted by the AO if air quality modeling, air quality monitoring, or other information demonstrates compliance with the NO_2 NAAQS.
- Modification – This stipulation may be modified if the EPA or the Montana Department of Environmental Quality (MDEQ) adds, deletes, or revises NO_x emission standards for drill rig, completion rig, or nonroad engines.
- Waiver – The stipulation may be waived if new information demonstrates that compliance with the NO_2 NAAQS will be achieved consistently throughout the lease area. The stipulation may also be waived if the NO_2 NAAQS is revoked or otherwise rendered inapplicable to drilling/completion operations.

Resource – Soils, Sensitive

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface occupancy and use, prior to surface disturbance on sensitive soils, a reclamation plan must be approved by the administrative officer. Sensitive soils are determined using a combination of slope and soil erodibility. The plan must demonstrate the following:

    - no other practicable alternatives exist for relocating the activity,
    - the activity will be located to reduce impacts to soil and water resources,
    - site productivity will be maintained or restored,
    - surface runoff and sedimentation will be adequately controlled,
    - on- and off-site areas will be protected from accelerated erosion,
    - that no areas susceptible to mass wasting would be disturbed, and
    - surface-disturbing activities will be prohibited during extended wet periods.

- Objective – To maintain the chemical, physical, and biotic properties of soils, which includes maintaining soil productivity, soil stability, and soil biotic properties. This will prevent excessive erosion, potential mass wasting, and improve the likelihood of successful reclamation..
- Exception – The administrative officer may grant an exception to this stipulation if the operator can demonstrate that the proposed action will not contribute to degradation of the soil resource (e.g. excessive soil erosion, mass wasting, and/or lost productivity) or downslope resource conditions (e.g. reduced water quality due to sedimentation).
- Modification – The administrative officer may modify the area affected by this stipulation if it is determined that portions of the leasehold do not contain sensitive soils.
- Waiver – The administrative officer may waive this stipulation if it is determined that the entire leasehold does not contain sensitive soils.

Resource – Badlands, Rock Outcrop

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface occupancy and use on badlands or rock outcrop, a plan must be approved by the AO that demonstrates effects from the proposed action can be adequately mitigated. The plan must demonstrate that no other practicable alternatives exist for relocating the activity. The plan must include a detailed description of how the activity would:

  - control wind and water erosion,
  - control surface runoff,
  - minimize sediment production,
  - maintain site productivity, and
  - complete reclamation.

- Objective – To prevent excessive soil erosion and to avoid disturbing areas subject to potential reclamation problems.
- Exception – The AO may not grant exceptions to this stipulation.
- Modification – The AO may modify the area affected by this stipulation if it is determined that portions of the leasehold do not include these types of areas.
- Waiver – The AO may waive this stipulation if it is determined that the entire leasehold does not include these types of areas.

Resource –100-year Floodplains

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface occupancy and use in 100-year floodplains, a plan must be approved by the AO that demonstrates that no other practicable alternative exists and demonstrates how the following will be accomplished:

  - adverse impacts to the unique biological and hydrological features associated with floodplains will be minimized;
  - adverse impacts to the natural and beneficial values of floodplains will be minimized;
  - human safety, health, and welfare associated with the risk of flood loss will not be adversely affected;
  - floodplains, streambanks, streambeds, waterbodies, and streams will be managed to minimize accelerated erosion and sedimentation;
  - water quality and quantity will be at acceptable levels and in conformance with state and federal laws;
  - native vegetation (including woody species) will be protected or restored in areas where appropriate;
  - surface-disturbing activities will be prohibited during extended wet periods;
  - soil compaction will be minimized; and
  - the areal extent of surface-disturbing activities and native vegetation removal will be minimized.

- Objective – To protect the unique biological and hydrological features and functions associated with floodplains.
- Exception – An exception to this stipulation may be granted by the AO if the project initiator submits a plan that demonstrates that no other practicable alternative exists and the activity can be adequately mitigated. An exception to this stipulation may be granted by the AO if the entire surface-disturbing activity will benefit floodplains.
- Modification – The area affected by this stipulation can be modified by the AO if it is determined that portions of the area do not include floodplains.
- Waiver – This stipulation can be waived by the AO if it is determined that the entire leasehold does not include floodplains.

Resource –Waterbodies and Streams

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface occupancy and use in waterbodies and streams, a plan must be approved by the AO that demonstrates that no other practicable alternative exists and demonstrates how the following will be accomplished:

  - adverse impacts to the unique biological and hydrological features associated with waterbodies and streams will be minimized;
  - floodplains, streambanks, streambeds, waterbodies, and streams will be managed to minimize accelerated erosion and sedimentation;
  - water quality and quantity will be at acceptable levels and in conformance with state and federal laws;
  - native vegetation (including woody species) will be protected or restored in areas where appropriate;
  - surface-disturbing activities will be prohibited during extended wet periods; and
  - the areal extent of surface-disturbing activities and native vegetation removal will be minimized.

- Objective – To protect water quality and the unique biological and hydrological features and functions associated with waterbodies and streams.
- Exception – An exception to this stipulation may be granted by the AO if the project initiator submits a plan that demonstrates that no other practicable alternative exists and the activity can be adequately mitigated. An exception to this stipulation may be granted by the AO if the entire surface-disturbing activity will benefit waterbodies and streams.
- Modification – The area affected by this stipulation can be modified by the AO if it is determined that portions of the area do not include waterbodies and streams.
- Waiver – This stipulation can be waived by the AO if it is determined that the entire surface-disturbing activity does not include waterbodies and streams.

Resource – Source Water Protection Areas

- Stipulation – Surface occupancy and use within State-designated Source Water Protection Areas is subject to the following operating constraints: prior to surface occupancy or use of lands within Source Water Protection Areas, a plan shall be prepared by the proponent as a component of the APD, Sundry Notice, etc. and approved by the AO. The plan must demonstrate to the AO's satisfaction that the proposed action will comply with all requirements of the State-approved Source Water Protection Plan, if available. If a State-approved Source Water Protection Plan is not available, the plan must:

  - provide an inventory of all potential sources of contamination associated with the proposed action,
  - determine the susceptibility of the public water supply to those contaminant sources,
  - identify procedures to follow and any equipment needed to respond to a release of contaminants, and
  - identify the method that would be used to communicate with water users in the event of a release of contaminants.

- Objective – To protect human health by minimizing the potential contamination of public water systems. Source water is untreated water from streams, rivers, lakes, or aquifers used to supply public water systems. Ensuring that source water is protected from contamination can reduce the costs of treatment and risks to human health. This stipulation would protect the State-designated Source Water Protection Areas that protect public water systems from potential contamination.
- Exception – The AO may not grant exceptions to this stipulation.
- Modification – The AO may modify the boundaries of the stipulated area if it is determined that portions of the leasehold do not include Source Water Protection Areas.
- Waiver – This stipulation may be waived by the AO if it is determined that the entire leasehold does not include Source Water Protection Areas.

Resource – Riparian and Wetland Areas

- Stipulation – Surface occupancy and use is subject to the following operating constraints: activities, including permanent facilities and linear underground facilities, will avoid riparian and wetland areas.

If avoidance is not possible, activities will be authorized within riparian and wetland areas but subject to approved design features (stabilization, location and timing) demonstrating how the following will be accomplished to improve or maintain proper functioning condition in riparian and wetland areas:

  - the unique biological and hydrological features associated with riparian and wetland areas will be protected or restored;
  - surface-disturbing activities will be prohibited during extended wet periods;
  - riparian and wetland areas, streambanks, streams, and waterbodies will be protected from accelerated erosion (such as rilling, gullying, piping, and mass wasting) and sedimentation;
  - water quality and quantity will be kept to acceptable levels and conformance with state and federal water quality laws; and
  - native, woody species will be protected or restored where appropriate.

- Objective – To protect the unique biological and hydrological features associated with riparian and wetland areas.
- Exception – An exception to this stipulation may be granted by the AO if the operator submits a plan demonstrating that impacts can be adequately mitigated to improve or maintain PFC.
- Modification – The area affected by this stipulation can be modified by the AO if it is determined that portions of the area do not include riparian and wetland areas. The area affected by this stipulation can be modified if the AO determines that the surface-disturbing or disruptive activity, permanent facility, and linear underground facility will not adversely affect riparian and wetland resources.
- Waiver – This stipulation can be waived by the AO if it is determined that the entire leasehold does not include riparian or wetland areas. This stipulation can be waived if the AO determines that the surface-disturbing or disruptive activity, will not adversely affect riparian and wetland resources.

Resource – Big Game Crucial Winter Range

- Stipulation – Surface occupancy and use is subject to the following operating constraint: prior to surface occupancy and use within crucial winter ranges for big game wildlife, a plan must be approved by the AO that maintains the functionality of habitat.
- Objective – To facilitate long-term maintenance of big game wildlife populations and protect white-tailed deer, mule deer, elk, and antelope crucial winter ranges from disturbance during winter use season.
- Exception – None
- Modification – The boundaries of the stipulated area can be modified if the AO determines portions of the leasehold no longer contain crucial winter range for big game wildlife.
- Waiver – This stipulation can be waived if the AO determines the entire leasehold no longer contains crucial winter range for big game wildlife.

Resource – Sharp-tailed Grouse Leks and Nesting Habitat

- Stipulation – Surface occupancy and use would be allowed within 2 miles of sharp-tailed grouse leks with design features to maintain the functionality of nesting habitat and lek site.
- Objective – To protect sharp-tailed grouse lek sites and nesting habitats.
- Exception – An exception to this stipulation may be granted by the AO if the project proponent submits a plan demonstrating how the activity can proceed without negatively impacting the lek and the birds associated with the lek, or it demonstrates impacts will be adequately mitigated.
- Modification – The boundaries of the stipulated areas can be modified if the AO determines portions of the leasehold are no longer within 2 miles of sharp-tailed grouse lek sites.
- Waiver – This stipulation can be waived if the AO determines the entire leasehold is no longer within 2 miles of a lek.

Resource – Colonial Nesting Waterbirds

- Stipulation – Surface occupancy and use would be allowed in waterbird nesting colonies with design features to minimize disturbance to colonial nesting waterbirds.
- Objective – To protect waterbird nesting colonies from disturbance during spring and early summer to maximize annual production of young and to protect nesting activities adjacent to nesting sites for the long-term maintenance of colonial waterbird populations.
- Exception – An exception may be granted by the AO if the project proponent submits a plan demonstrating impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines portions of the area no longer contain waterbird nesting colonies.
- Waiver – This stipulation can be waived if the AO determines the entire leasehold no longer contains waterbird nesting colonies.

Resource – Bighorn Sheep Habitat

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface occupancy and use on bighorn sheep habitat, a plan must be approved by the AO that maintains the functionality of the habitat.
- Objective – To protect and maintain the functionality of bighorn sheep habitat and minimize habitat loss.
- Exception – None
- Modification – The boundaries of the stipulated area may be modified if the AO determines portions of the area no longer contain bighorn sheep habitat.
- Waiver – This stipulation may be waived if the AO determines the entire leasehold no longer contains bighorn sheep habitat.

Resource –Raptor Nest Sites

- Stipulation – Surface occupancy and use is allowed in and within 0.50 mile of raptor nest sites active within the past 7 years with design features to minimize disturbance to nest site and maintain functionality of the habitat.
- Objective – To protect nest sites of raptors identified as species of special concern (burrowing owl, golden eagle, ferruginous hawk, Swainson's hawk, prairie falcon, and northern goshawk).
- Exception – An exception to this stipulation may be granted by the AO if the project proponent submits a plan demonstrating impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines portions of the area are no longer within 0.50 mile of raptor nest sites active within the past 7 years.
- Waiver – This stipulation can be waived if the AO determines the entire leasehold is no longer within 0.5 miles of raptor nest sites active within the past 7 years.

Resource – Piping Plover Habitat

- Stipulation – Surface occupancy and use is allowed within 0.25 mile of piping plover habitat with design features to maintain the functionality of the habitat.
- Objective – To protect piping plover habitat.
- Exception – An exception may be granted by the AO if the project proponent submits a plan demonstrating the proposed action will not affect the piping plover or its habitat. If the AO determines the action may affect the piping plover or its habitat, consultation with the USFWS will be required prior to final determination on the exception.
- Modification – The boundaries of the stipulated areas may be modified if the AO, in consultation with the USFWS, determines portions of the area are no longer within 0.25 mile of piping plover habitat.
- Waiver – This stipulation may be waived if the AO, in consultation with the USFWS, determines the entire leasehold is no longer within 0.25 mile of piping plover habitat.

Resource – Interior Least Tern Habitat

- Stipulation – Surface occupancy and use is allowed within 0.25 mile of interior least tern habitat with design features to maintain the functionality of the habitat.
- Objective – To protect interior least tern habitat.
- Exception – An exception may be granted by the AO if the project proponent submits a plan demonstrating the proposed action will not affect the interior least tern or its habitat. If the AO determines the action may affect the interior least tern or its habitat, consultation with the USFWS will be required prior to final determination on the exception.
- Modification – The boundaries of the stipulated areas may be modified if the AO, in consultation with the USFWS, determines portions of the area are no longer within 0.25 mile of interior least tern habitat.
  Waiver – This stipulation may be waived if the AO, in consultation with the USFWS, determines the entire leasehold is no longer within 0.25 mile of interior least tern habitat.

Resource – Sage-grouse Habitat – General Habitat Areas

- Stipulation – Surface occupancy and use is allowed within 3.1 miles of leks with design features to maintain the functionality of the habitat.
- Objective – To maintain the integrity of sage-grouse habitat and promote movement and genetic diversity to support sustainable sage-grouse populations.
- Exception – The AO may grant an exception if the action, as proposed or specified, will meet the goals and objectives for sage-grouse habitat and will maintain the functionality of the habitat.
- Modification – The AO may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 3.1 miles of a sage-grouse lek.
- Waiver – This stipulation may be waived, if:
    - in consultation with MFWP, it is determined the lease area has been altered to the point sage-grouse no longer occupy the site and there is no reasonable likelihood of functional habitat being restored;
    - sage-grouse are no longer a BLM Special Status Species; or
    - no reasonable alternative development scenario effectively mitigating the impacts is possible.

Resource – Sage-grouse Habitat – Priority Areas

- Stipulation – Surface occupancy and use is subject to the following operating constraints: to minimize the impacts of surface-disturbing activities or disruptive activities, no more than 1 surface disturbance per 640 acres, with a cumulative, direct, and indirect disturbance of no more than 3 percent of the sagebrush habitat in the 640-acre area from the point of the disturbance, can be authorized at a time, as long as functional sage-grouse habitat and the associated populations are maintained at the same levels as trend areas. Disturbed areas will have to be fully reclaimed to pre-disturbance conditions or a desired plant community before additional disturbance could be approved.
- Objective – To maximize the integrity of the habitat to support maximum sage-grouse populations.
- Exception – The AO may grant an exception if the action, as proposed or specified, will meet the goals and objectives for sage-grouse habitat and will not compromise the functionality of the habitat.
- Modification – The AO may modify the boundaries of the stipulated area if portions of the leasehold are no longer sage-grouse habitat.
- Waiver – This stipulation may be waived, if:
    - in consultation with MFWP, it is determined the entire leasehold has been altered to the point sage-grouse no longer occupy the site and there is no reasonable likelihood of functional habitat being restored; or
    - sage-grouse are no longer a BLM Special Status Species.

Resource – Sage-grouse Habitat – Restoration Areas

- Stipulation – Surface occupancy and use would be allowed with design features to maintain functionality of the habitat.
- Objective – To maintain integrity of the existing sage-grouse habitat and maximize restoration efforts while allowing for the permitted uses.
- Exception – The AO may grant an exception to this stipulation if the action, as proposed or stipulated, will meet the goals and objectives for sage-grouse habitat and will maintain functionality of the habitat.
- Modification – The AO may modify the boundaries of the stipulated area, if a portion of the leasehold is determined not to be sage-grouse habitat.
- Waiver – This stipulation may be waived, if:

    - in consultation with MFWP, it is determined significant portions of the leasehold have been altered and there is no reasonable likelihood of functional habitat being restored;
    - sage-grouse are no longer a BLM Special Status Species; or
    - no reasonable alternative development scenario effectively mitigating impacts is possible.

Resource – VRM Classes II

- Stipulation – In order to retain the existing character of the landscape (VRM Class II Objective), oil and gas development activities will be located, designed, constructed, operated, and reclaimed within 2 years from initiation of construction so that activities should not attract attention of the casual observer. This stipulation does not apply to operation and maintenance activities.
- Objective – To protect visual resource values while allowing energy development and related activities to occur which have been mitigated to retain the existing character of the landscape.
- Exception – None
- Modification – None
- Waiver – None

Resource – Lands with Wilderness Characteristics

- Stipulation: Surface occupancy and use is subject to the following operating constraints: all surface disturbing activities and semi-permanent and permanent facilities would require special design and location placement to blend with the natural surroundings and meet objectives within areas that are managed to protect wilderness characteristics.
- Objective: To protect wilderness characteristics as a priority over other multiple uses.
- Exception: An exception may be granted if the project proponent, BLM, and where necessary, other affected interests, negotiate compensation or mitigation that satisfactorily offsets anticipated impacts to wilderness characteristics in the affected area.
- Modification: None
- Waiver: None

LEASE NOTICE

Resource - Air Resource Analysis

The lessee/operator is given notice that prior to project-specific approval, additional air resource analyses may be required in order to comply with the NEPA, FLPMA, and/or other applicable laws and regulations. Analyses may include equipment and operations information, emission inventory development, dispersion modeling or photochemical grid modeling for air quality and/or air quality related value impact analysis, and/or emission control determinations. These analyses may result in the imposition of additional project-specific control measures to protect air resources.

Resource - Special Status Species

The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or requirements of the ESA as amended, 16 U.S.C. § et seq., including completion of any required procedure for conference or consultation.

Resource - Migratory Bird Treaty Act

The Operator is responsible for compliance with provisions of the Act by implementing one of the following measures; a) avoidance by timing; ground disturbing activities will not occur from April 15 to July 15, b) habitat manipulation; render proposed project footprints unsuitable for nesting prior to the arrival of migratory birds (blading or pre-clearing of vegetation must occur prior to April 15 within the year and area scheduled for activities between April 15 and July 15 of that year to deter nesting, or c) survey-buffer-monitor; surveys will be conducted by a BLM approved biologist within the area of the proposed action and a 300 foot buffer from the proposed project footprint between April 15 to July 15 if activities are proposed within this timeframe. If nesting birds are found, activities would not be allowed within 0.1 miles of nests until after the birds have fledged. If active nests are not found, construction activities must occur within 7 days of the survey. If this does not occur, new surveys must be conducted. Survey reports will be submitted to the appropriate BLM Office.

Resource - Black-footer Ferret Surveys

Surface occupancy or use is subject to the following special operating constraints: prior to surface disturbance, prairie dog colonies and complexes 80 acres or more in size will be examined to determine the presence or absence of black-footed ferrets. The findings of this examination may result in some restrictions to the operator's plans or may even preclude use and occupancy. The lessee or operator may, at their own option, conduct an examination to determine the presence or absence of black-footed ferrets. This examination must be done by or under the supervision of a qualified resource specialist approved by the surface management agency. An acceptable report must be provided to the surface management agency documenting the presence or absence of black footed ferrets and identifying the anticipated effects of the proposed action on the black-footed ferret and its habitat.

ALTERNATIVE D

NO SURFACE USE

Resource – Bald Eagles

- Stipulation - Surface occupancy and use is prohibited within 0.50 mile of bald eagle nest sites active within the preceding 5 years.
- Objective – To protect nest sites and nesting activities of bald eagles, BLM priority species for management.
- Exception – The AO may grant an exception, subject to coordination with the USFWS, if the action will not to result in nest territory abandonment.
- Modification – The AO may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.50 mile of bald eagle nest sites active within the past 5 years.
- Waiver – The AO may waive this stipulation if the entire leasehold is no longer within 0.50 mile of bald eagle nest sites active within the past 5 years or if the habitat has been altered to an extent, future use by nesting bald eagles is unlikely.

Resource – Black-footed Ferrets

- Stipulation - Surface occupancy and use is prohibited within 0.25 mile of black-footed ferret habitat (complex of prairie dog towns within 1.5 km of each other comprising a total of at least 1,500 acres).
- Objective – To protect habitat for the federally endangered black-footed ferret.
- Exception – The AO, subject to consultation with the USFWS, may grant an exception if the action will not impair the function or suitability of the black-footed ferret habitat.
- Modification - The AO, subject to confirmation from the USFWS, may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.25 mile of current or potential black-footed ferret habitat.
- Waiver – The AO, subject to consultation with the USFWS, may waive this stipulation, if the entire leasehold is no longer within 0.25 mile of current or potential black-footed ferret habitat.

CONTROLLED SURFACE USE

Resource – Air Resources

- Stipulation – Surface occupancy and use is subject to the requirement that each diesel-fueled non-road engine with greater than 200 horsepower design rating to be used during drilling or completion activities meets one of the following two criteria: (1) the engine was manufactured to meet USEPA NO_x emission standards for Tier 4 non-road diesel engines, or (2) the engine emits NO_x at rates less than or equal to USEPA emission standards for Tier 4 non-road diesel engines.
- Objective – To protect air resources and meet the 1-hour NO_2 NAAQS.
- Exception – An exception may be granted by the AO if air quality modeling, air quality monitoring, or other information demonstrates compliance with the NO_2 NAAQS.
- Modification – This stipulation may be modified if the EPA or the Montana Department of Environmental Quality (MDEQ) adds, deletes, or revises NO_x emission standards for drill rig, completion rig, or non-road engines.
- Waiver – The stipulation may be waived if new information demonstrates that compliance with the NO_2 NAAQS will be achieved consistently throughout the lease area. The stipulation may also be waived if the NO_2 NAAQS is revoked or otherwise rendered inapplicable to drilling/completion operations.

Resource – Soils, Sensitive Soils

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface occupancy and use, prior to surface disturbance on sensitive soils, a reclamation plan must be approved by the administrative officer. Sensitive soils are determined using a combination of slope and soil erodibility. The plan must demonstrate the following:

    - no other practicable alternatives exist for relocating the activity,
    - the activity will be located to reduce impacts to soil and water resources,
    - site productivity will be maintained or restored,
    - surface runoff and sedimentation will be adequately controlled,
    - on- and off-site areas will be protected from accelerated erosion,
    - that no areas susceptible to mass wasting would be disturbed, and
    - surface-disturbing activities will be prohibited during extended wet periods.

- Objective – To maintain the chemical, physical, and biotic properties of soils, which includes maintaining soil productivity, soil stability, and soil biotic properties. This will prevent excessive erosion, potential mass wasting, and improve the likelihood of successful reclamation..
- Exception – The administrative officer may grant an exception to this stipulation if the operator can demonstrate that the proposed action will not contribute to degradation of the soil resource (e.g. excessive soil erosion, mass wasting, and/or lost productivity) or downslope resource conditions (e.g. reduced water quality due to sedimentation).

- Modification – The administrative officer may modify the area affected by this stipulation if it is determined that portions of the leasehold do not contain sensitive soils.
- Waiver – The administrative officer may waive this stipulation if it is determined that the entire leasehold does not contain sensitive soils.

Resource – Badlands, Rock Outcrop

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface occupancy and use on badlands or rock outcrop, a plan must be approved by the AO that demonstrates effects from the proposed action can be adequately mitigated. The plan must demonstrate that no other practicable alternatives exist for relocating the activity. The plan must include a detailed description of how the activity would:

    - control wind and water erosion,
    - control surface runoff,
    - minimize sediment production,
    - maintain site productivity, and
    - complete reclamation.

- Objective – To prevent excessive soil erosion and to avoid disturbing areas subject to potential reclamation problems.
- Exception – The AO may not grant exceptions to this stipulation.
- Modification – The AO may modify the area affected by this stipulation if it is determined that portions of the leasehold do not include these types of areas.
- Waiver – The AO may waive this stipulation if it is determined that the entire leasehold does not include these types of areas.

Resource – 100-year Floodplains

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface occupancy and use in 100-year floodplains, a plan must be approved by the AO that demonstrates that no other practicable alternative exists and demonstrates how the following will be accomplished:

    - adverse impacts to the unique biological and hydrological features associated with floodplains will be minimized;
    - adverse impacts to the natural and beneficial values of floodplains will be minimized;
    - human safety, health, and welfare associated with the risk of flood loss will not be adversely affected;
    - floodplains, streambanks, streambeds, waterbodies, and streams will be managed to minimize accelerated erosion and sedimentation;
    - water quality and quantity will be at acceptable levels and in conformance with state and federal laws;
    - native vegetation (including woody species) will be protected or restored in areas where appropriate;
    - surface-disturbing activities will be prohibited during extended wet periods;
    - soil compaction will be minimized; and
    - the areal extent of surface-disturbing activities and native vegetation removal will be minimized.

- Objective – To protect the unique biological and hydrological features and functions associated with floodplains.
- Exception – An exception to this stipulation may be granted by the AO if the project initiator submits a plan that demonstrates that no other practicable alternative exists and the activity can be adequately

mitigated. An exception to this stipulation may be granted by the AO if the entire surface-disturbing activity will benefit floodplains.
- Modification – The area affected by this stipulation can be modified by the AO if it is determined that portions of the area do not include floodplains.
- Waiver – This stipulation can be waived by the AO if it is determined that the entire leasehold does not include floodplains.

Resource –Waterbodies and Streams

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface occupancy and use in waterbodies and streams, a plan must be approved by the AO that demonstrates that no other practicable alternative exists and demonstrates how the following will be accomplished:

    - adverse impacts to the unique biological and hydrological features associated with waterbodies and streams will be minimized;
    - floodplains, streambanks, streambeds, waterbodies, and streams will be managed to minimize accelerated erosion and sedimentation;
    - water quality and quantity will be at acceptable levels and in conformance with state and federal laws;
    - native vegetation (including woody species) will be protected or restored in areas where appropriate;
    - surface-disturbing activities prohibited during extended wet periods; and
    - the areal extent of surface-disturbing activities and native vegetation removal will be minimized.

- Objective – To protect water quality and the unique biological and hydrological features and functions associated with waterbodies and streams.
- Exception – An exception to this stipulation may be granted by the AO if the project initiator submits a plan that demonstrates that no other practicable alternative exists and the activity can be adequately mitigated. An exception to this stipulation may be granted by the AO if the entire surface-disturbing activity will benefit waterbodies and streams.
- Modification – The area affected by this stipulation can be modified by the AO if it is determined that portions of the area do not include waterbodies and streams.
- Waiver – This stipulation can be waived by the AO if it is determined that the entire surface-disturbing activity does not include waterbodies and streams.

Resource – Source Water Protection Areas

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface occupancy and use of lands within Source Water Protection Areas, a plan must be approved by the AO that demonstrate to the AO's satisfaction that the proposed action will comply with all requirements of the State-approved Source Water Protection Plan, if available. If a State-approved Source Water Protection Plan is not available, the plan must:

    - provide an inventory of all potential sources of contamination associated with the proposed action,
    - determine the susceptibility of the public water supply to those contaminant sources,
    - identify procedures to follow and any equipment needed to respond to a release of contaminants, and
    - identify the method that would be used to communicate with water users in the event of a release of contaminants.

- Objective – To protect human health by minimizing the potential contamination of public water systems. Source water is untreated water from streams, rivers, lakes, or aquifers used to supply public

water systems. Ensuring that source water is protected from contamination can reduce the costs of treatment and risks to human health. This stipulation would protect the State-designated Source Water Protection Areas that protect public water systems from potential contamination.

- Exception – The AO may not grant exceptions to this stipulation.
- Modification – The AO may modify the boundaries of the stipulated area if it is determined that portions of the leasehold do not include Source Water Protection Areas.
- Waiver – This stipulation may be waived by the AO if it is determined that the entire leasehold does not include Source Water Protection Areas.

Resource – Riparian and Wetland Areas

- Stipulation – Surface occupancy and use is subject to the following operating constraints: surface-disturbing or disruptive activities will avoid riparian and wetland areas. If avoidance is not possible, surface-disturbing or disruptive activities will be authorized within riparian and wetland areas with approved design features (stabilization, location and timing) demonstrating how the following will be accomplished to improve or maintain riparian and wetland proper functioning condition:
    - the unique biological and hydrological features associated with riparian and wetland areas protected or restored (or both);
    - surface occupancy and use is prohibited during extended wet periods;
    - riparian and wetland areas, streambanks, streams, and waterbodies protected from accelerated erosion (such as rilling, gullying, piping, and mass wasting) and sedimentation;
    - water quality and quantity kept to acceptable levels and conformance with state and federal laws; and
    - native, woody species protected or restored (or both) where appropriate.
- Objective – To protect the unique biological and hydrological features associated with riparian and wetland areas.
- Exception – An exception to this stipulation may be granted by the AO if the operator submits a plan demonstrating that impacts can be adequately mitigated to improve or maintain PFC.
- Modification – The area affected by this stipulation can be modified by the AO if it is determined that portions of the area do not include riparian or wetland areas.
- Waiver – This stipulation can be waived by the AO if it is determined that the entire leasehold does not include riparian or wetland areas. This stipulation can be waived if the AO determines that the surface-disturbing or disruptive activity, will not adversely affect riparian and wetland resources.

Resource – Big Game Crucial Winter Range

- Stipulation – Surface occupancy and use is subject to operating constraints: prior to surface occupancy and use within crucial winter ranges for big game wildlife, a plan must be submitted and approved by the AO that maintains the functionality of habitat.
- Objective – To facilitate long-term maintenance of big game wildlife populations and protect white-tailed deer, mule deer, elk, and antelope, crucial winter range from disturbance during the winter use season.
- Exception – None
- Modification – The boundaries of the stipulated area can be modified if the AO determines portions of the leasehold no longer contain crucial winter range for big game wildlife.
- Waiver – This stipulation can be waived if the AO determines the entire leasehold no longer contains crucial winter range for big game wildlife.

Resource – Sharp-tailed Grouse Leks and Nesting Habitat

- Stipulation – Surface occupancy and use would be allowed within 2 miles of sharp-tailed grouse leks with design features to maintain the functionality of nesting habitat and lek site.
- Objective – To protect sharp-tailed grouse lek sites and nesting habitats.

- Exception – An exception to this stipulation may be granted by the AO if the project proponent submits a plan demonstrating how the activity can proceed without negatively impacting the lek and the birds associated with the lek, or it demonstrates impacts will be adequately mitigated.
- Modification – The boundaries of the stipulated areas can be modified if the AO determines portions of the leasehold are no longer within 2 miles of sharp-tailed grouse lek sites.
- Waiver – This stipulation can be waived if the AO determines the entire leasehold is no longer within 2 miles of a lek.

Resource – Colonial Nesting Waterbirds

- Stipulation – Surface occupancy and use would be allowed in waterbird nesting colonies with design features to minimize disturbance to colonial nesting waterbirds.
- Objective – To protect waterbird nesting colonies from disturbance during spring and early summer to maximize annual production of young and to protect nesting activities adjacent to nesting sites for the long-term maintenance of colonial waterbird populations.
- Exception – An exception may be granted by the AO if the project proponent submits a plan demonstrating impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines portions of the area no longer contain waterbird nesting colonies.
- Waiver – This stipulation can be waived if the AO determines the entire leasehold no longer contains waterbird nesting colonies.

Resource – Bighorn Sheep Habitat

- Stipulation – Surface occupancy and use would be subject to operating constraints: prior to surface occupancy and use within bighorn sheep habitat, a plan must be approved by the AO that maintains the functionality of habitat.
- Objective – To protect and maintain the functionality of bighorn sheep habitat and minimize habitat loss.
- Exception – None
- Modification – The boundaries of the stipulated area may be modified if the AO determines portions of the area no longer contain bighorn sheep habitat.
- Waiver – This stipulation may be waived if the AO determines the entire leasehold no longer contains bighorn sheep habitat.

Resource –Raptor Nest Sites

- Stipulation – Surface occupancy and use would allowed within 0.50 mile of raptor nest sites active within the past 2 years with design features to minimize disturbance of the nest site and maintain functionality of the habitat.
- Objective – To protect nest sites of raptors identified as species of special concern (burrowing owl, golden eagle, ferruginous hawk, Swainson's hawk, prairie falcon, and northern goshawk).
- Exception – An exception to this stipulation may be granted by the AO if the project proponent submits a plan demonstrating impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines portions of the area are no longer within 0.50 miles of raptor nest sites active within the past 2 years.
- Waiver – This stipulation can be waived if the AO determines the entire leasehold is no longer within 0.50 miles of raptor nest sites active within the past 2 years.

Resource – Piping Plover Habitat

- Stipulation – Surface occupancy and use is allowed within 0.25 mile of piping plover habitat with design features to maintain the functionality of the habitat.
- Objective – To protect piping plover habitat.

- Exception – An exception may be granted by the AO if the project proponent submits a plan demonstrating the proposed action will not affect the piping plover or its habitat. If the AO determines the action may affect the piping plover or its habitat, consultation with the USFWS will be required prior to final determination on the exception.
- Modification – The boundaries of the stipulated areas may be modified if the AO, in consultation with the USFWS, determines portions of the area are no longer within 0.25 mile of piping plover habitat.
- Waiver – This stipulation may be waived if the AO, in consultation with the USFWS, determines the entire leasehold is no longer within 0.25 mile of piping plover habitat.

Resource – Interior Least Tern Habitat

- Stipulation – Surface occupancy and use is allowed within 0.25 mile of interior least tern habitat with design features to maintain the functionality of the habitat.
- Objective – To protect interior least tern habitat.
- Exception – An exception may be granted by the AO if the project proponent submits a plan demonstrating the proposed action will not affect the interior least tern or its habitat. If the AO determines the action may affect the interior least tern or its habitat, consultation with the USFWS will be required prior to final determination on the exception.
- Modification – The boundaries of the stipulated areas may be modified if the AO, in consultation with the USFWS, determines portions of the area are no longer within 0.25 mile of interior least tern habitat.
- Waiver – This stipulation may be waived if the AO, in consultation with the USFWS, determines the entire leasehold is no longer within 0.25 mile of interior least tern habitat.

Resource – Black-tailed Prairie Dogs

- Stipulation – In the absence of black-footed ferrets, surface occupancy and use are allowed within black-tailed prairie dog colonies with design features to maintain the functionality of the habitat.
- Objective – To protect black-tailed prairie dogs, burrowing owls, mountain plovers, and other associated species that utilize prairie dog towns for nesting and breeding habitats.
- Exception – The AO may grant an exception if the project proponent submits a plan demonstrating impacts from the proposed action will not affect prairie dogs or associated species.
- Modification – The boundaries of the stipulated area can be modified if the AO determines portions of the leasehold are no longer contains prairie dog habitat.
- Waiver – This stipulation may be waived if any associated special status species are not observed or if the AO determines the entire leasehold no longer contains prairie dog habitat.

Resource – Pallid Sturgeon Habitat

- Stipulation – Surface occupancy and use would be allowed within 0.50 mile of rivers and streams identified as pallid sturgeon habitat with design features to maintain the functionality of the habitat.
- Objective – To protect the habitat of the pallid sturgeon, an endangered species under the ESA.
- Exception – An exception may be granted by the AO if the project proponent submits a plan demonstrating the proposed action will not affect the pallid sturgeon or its habitat. If the AO determines that the action may affect the pallid sturgeon or its habitat, consultation with the USFWS will be required prior to final determination on the exception.
- Modification – The boundaries of the stipulated area may be modified if the AO, in consultation with the USFWS, determines portions of the area are no longer within 0.50 mile of pallid sturgeon habitat.
- Waiver – The stipulation can be waived if the AO, in consultation with the USFWS, determines the entire leasehold is no longer within 0.50 mile of pallid sturgeon habitat.

Resource – Sage-grouse Habitat – General Habitat Areas

- Stipulation – Surface occupancy and use would be allowed within 2 miles of leks with design features to maintain the functionality of the habitat.

- Objective – To maintain the integrity of sage-grouse habitat and promote movement and genetic diversity to support sustainable sage-grouse populations.
- Exception – The AO may grant an exception if the action, as proposed or stipulated, will meet the goals and objectives for sage-grouse habitat and will not compromise the functionality of the habitat.
- Modification – The AO may modify the boundaries of the stipulated area if it is determined a portion of the area is no longer sage-grouse habitat or within 2 miles of leks.
- Waiver – This stipulation may be waived if:

    - after consultation with MFWP, it is determined the leasehold has been altered to the point sage-grouse no longer occupy the site and there is no reasonable likelihood of functional habitat being restored;
    - sage-grouse are no longer a BLM Special Status Species; or
    - no reasonable alternative development scenario effectively mitigating impacts is possible.

Resource – Sage-grouse Habitat – Priority Areas

- Stipulation – To minimize the impacts of surface-disturbing and disruptive activities, one surface disturbance per 640 acres, with a cumulative disturbance of no more than 10 percent of the sagebrush habitat within the 640-acre area, can be authorized at a time. Disturbed areas will have to be fully reclaimed to pre-disturbance conditions or to a desired plant community before additional disturbance could be approved.
- Objective – To maximize the integrity of the habitat to support maximum sage-grouse populations.
- Exception – The AO may grant an exception if the action, as proposed or specified, will meet the goals and objectives for sage-grouse habitat and will not impair the functionality of the habitat.
- Modification – The AO may modify the boundaries of the stipulated area if it is determined a portion of the leasehold no longer contains sage-grouse habitat.
- Waiver – This stipulation may be waived, if:

    - in consultation with MFWP, it is determined significant portions of the leasehold have been altered to the point sage-grouse no longer occupy the site and there is no reasonable likelihood of functional habitat being restored; or
    - sage-grouse are no longer a BLM Special Status Species.

Resource – Designated Sport-fish Reservoirs

- Stipulation – Surface occupancy and use would be allowed in and within 0.25 miles of sport-fish reservoirs with design features to minimize impacts.
- Objective – To protect fisheries habitat and recreational values of sport-fish reservoirs.
- Exception – An exception to this stipulation may be granted by the AO if the authorized activity will not compromise the fisheries habitat or recreational experience of those using the reservoir.
- Modification – The boundaries of the stipulated area may be modified if the AO determines portions of the leasehold or area no longer contain sport-fish reservoirs.
- Waiver – This stipulation may be waived if the AO determines the reservoir is not capable of supporting a sport fishery in the present or future.

Resource – VRM Classes II

- Stipulation – In order to retain the existing character of the landscape (VRM Class II Objective), oil and gas development activities will be located, designed, constructed, operated, and reclaimed within 2 years from initiation of construction so that activities should not attract attention of the casual observer. This stipulation does not apply to operation and maintenance activities.
- Objective – To protect visual resource values while allowing energy development and related activities to occur which have been mitigated to retain the existing character of the landscape.
- Exception – None
- Modification – None

- Waiver – None

Resource – Recreation

- Stipulation – Surface occupancy and use is subject to the following operating constraints: operations within developed and undeveloped recreation areas receiving concentrated public use must be conducted in a manner that minimizes encounters and conflicts with recreation users. Proposed activities may not alter or depreciate important recreational values located within these developed and undeveloped areas.
- Objective – To protect developed recreation areas and undeveloped recreation areas receiving concentrated public use.
- Exception – An exception to this stipulation may be granted by the AO if the project proponent submits a plan demonstrating that the impacts to recreation values and recreation users are acceptable or can be adequately mitigated.
- Modification – The area affected by this stipulation may be modified by the AO if the boundaries of the areas are changed.
- Waiver – None

Resource – National Historic Trails

- Stipulation: Surface occupancy and use is subject to the following operating constraints: all surface-disturbing activities and semi-permanent and permanent facilities in the National Trail Management Corridor of designated Lewis and Clark National Historic Trail would require design, including location, painting, and camouflage, to blend with the natural surroundings and meet the objectives for the area.
- Objective: To protect the nature and purposes; trail resources, qualities, values and associated settings; and primary use or uses of the historic trail, in accordance with the National Trails System Act.
- Exception: An exception may be granted where the operator completes a comprehensive trail inventory, as outlined in Manual 6280, and presents a proposal which demonstrates resource values are not affected or that adverse impacts can be adequately mitigated to prevent impacts to:

    - The nature and purposes of the National Trail;
    - National Trail resources, qualities, values, and associated settings;
    - National Trail primary use or uses;
    - The National Trail from the cumulative or trail wide perspective.

- Modification: None
- Waiver: None

Resource – Cultural Resources, NRHP-eligible Properties and Districts, and TCPs

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface disturbance, a SUPO and a cultural site mitigation plan for oil and gas activities must be approved by the AO for all activities in or within 300 feet of the boundaries of:

    - sites or areas designated or sites or areas that meet the criteria for allocation for designation for scientific use, conservation use, traditional use (socio-cultural use), public use, and experimental use;
    - the boundaries of sites or districts eligible for or included on the NRHP; and
    - the boundaries of TCPs, or sites or areas designated, or sites or areas that meet the criteria for allocation for designation for traditional use (socio-cultural use).

    Activity is prohibited in or within 300 feet of the boundaries of cultural properties determined to be of particular importance to American Indian groups, TCPs, or sites designated for traditional use. (Such

properties include, but are not limited to, burial locations, pictograph and petroglyph sites, vision quest locations, plant-gathering locations, and areas considered sacred or used for religious purposes.)

- Objective – To protect and avoid disturbance and inadvertent impacts to significant cultural properties, districts, and their settings; NRHP-eligible properties and districts; and those properties determined to be of particular importance to American Indian groups, designated TCPs, or those designated for traditional use and the settings in which they occur.
- Exception – An exception to this stipulation may be granted by the AO if the conditions described below are met.

    - The lessee or project proponent submits a plan demonstrating that adverse impacts or effects to the cultural property can be avoided by project redesign or relocation within the buffer area.
    - The project is located so that it and any associated surface disturbance will not alter the characteristics of the cultural or historic property by diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association; or so that there will be no destruction, damage, or alteration to all or part of the cultural resource's visual, atmospheric, or audible elements that could diminish the integrity of the property's significant historic features (e.g., project placed behind a hill or screened from view or by some other method within the buffer area).
    - The lessee or project proponent submits a plan demonstrating that the adverse impacts to cultural properties can be mitigated through data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the BLM, surface occupancy in the area will be prohibited.
    - The lessee or operator submits a plan demonstrating that operations will be designed or located in such a manner as to have a minimal impact to the natural setting and characteristics of the immediate area and demonstrating that adverse impacts to TCPs can be mitigated in consultation with, and to the satisfaction of, affected American Indian Tribes or American Indian groups.

- Modification – None
- Waiver – None

Resource – National Historic Landmarks (NHLs) and Historic Battlefields

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface disturbance, a SUPO and a cultural site mitigation plan must be approved by the AO for all activities within the visible area of designated or NRHP-nominated NHLs and sites (including a 3.5-mile radius of the Fort Union Historic Site NHL and 300-foot radius of the boundaries of NHLs and historic battlefields).
- Objective – To protect national historic sites, NHLs, historic sites eligible for the NRHP, and the setting or viewshed in which they occur.
- Exception –An exception to this stipulation may be granted by the AO if the conditions described below are met.

    - The lessee or project proponent submits a plan demonstrating that adverse impacts or effects to the cultural property can be avoided by project redesign or relocation within the buffer area.
    - The project is located so that it and any associated surface disturbance will not alter the characteristics of the cultural or historic property by diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association; or so that there will be no destruction, damage, or alteration to all or part of the cultural resource's visual, atmospheric, or audible elements that could diminish the integrity of the property's significant historic features (e.g., project placed behind a hill or screened from view or by some other method within the buffer area).

    - The lessee or project proponent submits a plan demonstrating that the adverse impacts to cultural properties can be mitigated through data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the BLM, surface occupancy on that area will be prohibited.

- Modification – None
- Waiver – None

Resource – Paleontological Resources (including the Powderville, Flat Creek Paleontological Area, Long Medicine Wheel, and Walstein ACECs)

- Stipulation – Surface occupancy and use is subject to the following operating constraints: surface occupancy and use will be allowed as long as the activities will not impact or have an effect on the quality and setting of significant paleontological localities or areas that meet the criteria for designation as such. Prior to surface disturbance, a SUPO and a mitigation plan, which must be approved by the AO, will be required for all surface-disturbing activities in or within 300 feet of designated significant paleontological localities or locality boundaries if the activities will impact or have an effect on the significant paleontological localities for future paleontological localities or areas that meet the criteria for designation as such. Surface-disturbing activities will be avoided whenever possible. If the surface-disturbing activity cannot be avoided, approved mitigation measures will be applied to minimize the impact to the paleontological resource.
- Objective – To preserve and protect significant vertebrate fossils and paleontological localities.
- Exception – An exception to this stipulation may be granted by the AO if the lessee or project proponent submits a plan demonstrating that the adverse impacts to paleontological localities can be mitigated through data recovery and extensive recordation. Where impacts to paleontological resources cannot be mitigated to the satisfaction of the surface management agency, surface occupancy on that area must be prohibited.
- Modification – None
- Waiver – None

Resource – Battle Butte Battlefield, Cedar Creek Battlefield, and Reynolds Battlefield ACECs

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface disturbance, a SUPO and a cultural site mitigation plan must be approved by the AO for all activities within the visible area of designated or NRHP-nominated NHLs and sites.
- Objective – To protect national historic sites, NHLs, and historic sites eligible for the NRHP, and the setting or viewshed in which they occur.
- Exception –An exception to this stipulation may be granted by the AO if the conditions described below are met.

    - The lessee or project proponent submits a plan demonstrating that adverse impacts or effects to the cultural property can be avoided by project redesign or relocation within the buffer area.
    - The project is located so that it and any associated surface disturbance will not alter the characteristics of the cultural or historic property by diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association; or so that there will be no destruction, damage, or alteration to all or part of the cultural resource’s visual, atmospheric, or audible elements that could diminish the integrity of the property's significant historic features (e.g., project placed behind a hill or screened from view or by some other method within the buffer area).
    - The lessee or project proponent submits a plan demonstrating that the adverse impacts to cultural properties can be mitigated through data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the BLM, surface occupancy on that area will be prohibited.

- Modification – None
- Waiver – None

Resource – Yonkee ACEC

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface disturbance, a SUPO and a cultural site mitigation plan for oil and gas activities must be approved by the AO for all activities in or within 300 feet of the boundaries of:

    - sites or areas designated or sites or areas that meet the criteria for allocation for designation for scientific use, conservation use, traditional use (socio-cultural use), public use, and experimental use;
    - the boundaries of sites or districts eligible for or included on the NRHP; and
    - the boundaries of TCPs, or sites or areas designated, or sites or areas that meet the criteria for allocation for designation for traditional use (socio-cultural use).

    Activity is prohibited in or within 300 feet of the boundaries of cultural properties determined to be of particular importance to American Indian groups, TCPs, or sites designated for traditional use. (Such properties include, but are not limited to, burial locations, pictograph and petroglyph sites, vision quest locations, plant-gathering locations, and areas considered sacred or used for religious purposes.)
- Objective – To protect and avoid disturbance and inadvertent impacts to significant cultural properties, districts, and their settings; NRHP-eligible properties and districts; and those properties determined to be of particular importance to American Indian groups, designated TCPs, or those designated for traditional use and the settings in which they occur.
- Exception – An exception to this stipulation may be granted by the AO if the conditions described below are met.

    - The lessee or project proponent submits a plan demonstrating that adverse impacts or effects to the cultural property can be avoided by project redesign or relocation within the buffer area.
    - The project is located so that it and any associated surface disturbance will not alter the characteristics of the cultural or historic property by diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association; or so that there will be no destruction, damage, or alteration to all or part of the cultural resource's visual, atmospheric, or audible elements that could diminish the integrity of the property's significant historic features (e.g., project placed behind a hill or screened from view or by some other method within the buffer area).
    - The lessee or project proponent submits a plan demonstrating that the adverse impacts to cultural properties can be mitigated through data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the BLM, surface occupancy in the area will be prohibited.
    - The lessee or operator submits a plan demonstrating that operations will be designed or located in such a manner as to have a minimal impact to the natural setting and characteristics of the immediate area and demonstrating that adverse impacts to TCPs can be mitigated in consultation with, and to the satisfaction of, affected American Indian Tribes or American Indian groups.

- Modification – None
- Waiver – None

LEASE NOTICE

Resource - Air Resource Analysis

The lessee/operator is given notice that prior to project-specific approval, additional air resource analyses may be required in order to comply with the NEPA, FLPMA, and/or other applicable laws and regulations. Analyses may include equipment and operations information, emission inventory development, dispersion modeling or photochemical grid modeling for air quality and/or air quality related value impact analysis, and/or emission control determinations. These analyses may result in the imposition of additional project-specific control measures to protect air resources.

Resource - Special Status Species

The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or requirements of the ESA as amended, 16 U.S.C. § et seq., including completion of any required procedure for conference or consultation.

Resource - Migratory Bird Treaty Act

The Operator is responsible for compliance with provisions of the Act by implementing one of the following measures; a) avoidance by timing; ground disturbing activities will not occur from April 15 to July 15, b) habitat manipulation; render proposed project footprints unsuitable for nesting prior to the arrival of migratory birds (blading or pre-clearing of vegetation must occur prior to April 15 within the year and area scheduled for activities between April 15 and July 15 of that year to deter nesting, or c) survey-buffer-monitor; surveys will be conducted by a BLM approved biologist within the area of the proposed action and a 300 foot buffer from the proposed project footprint between April 15 to July 15 if activities are proposed within this timeframe. If nesting birds are found, activities would not be allowed within 0.1 miles of nests until after the birds have fledged. If active nests are not found, construction activities must occur within 7 days of the survey. If this does not occur, new surveys must be conducted. Survey reports will be submitted to the appropriate BLM Office.

Resource - Black-footer Ferret Surveys

Surface occupancy or use is subject to the following special operating constraints: prior to surface disturbance, prairie dog colonies and complexes 80 acres or more in size will be examined to determine the presence or absence of black-footed ferrets. The findings of this examination may result in some restrictions to the operator's plans or may even preclude use and occupancy. The lessee or operator may, at their own option, conduct an examination to determine the presence or absence of black-footed ferrets. This examination must be done by or under the supervision of a qualified resource specialist approved by the surface management agency. An acceptable report must be provided to the surface management agency documenting the presence or absence of black footed ferrets and identifying the anticipated effects of the proposed action on the black-footed ferret and its habitat.

ALTERNATIVE E (Proposed Alternative)

NO SURFACE OCCUPANCY

Resource – Badlands, Rock Outcrop

- Stipulation – Surface occupancy and use is prohibited on badlands and rock outcrop.
- Objective – To prevent excessive soil erosion and to avoid disturbing areas subject to potential reclamation problems.
- Exception – The AO may not grant exceptions to this stipulation.

- Modification – The AO may modify the area affected by this stipulation if it is determined that portions of the leasehold do not include these types of areas.
- Waiver – The AO may waive this stipulation if it is determined that the entire leasehold does not include these types of areas.

Resource – Streams, Waterbodies, Riparian, Wetland, and Floodplains

- Stipulation – Surface occupancy and use is prohibited within perennial or intermittent streams, lakes, ponds, reservoirs, 100-year floodplains, wetlands, and riparian areas.
- Objective – To protect the unique biological and hydrological features and functions associated with perennial and intermittent streams, lakes, ponds, reservoirs, floodplains, wetlands, and riparian areas.
- Exception – No exceptions would be allowed in streams, natural lakes, or wetlands. An exception may be granted by the AO for riparian areas, floodplains, and artificial ponds or reservoirs if the operator can demonstrate that:

    - there are no practicable alternatives to locating facilities in these areas,
    - the proposed actions would maintain or enhance resource functions, and
    - all reclamation goals and objectives would be met.

- Modification – The AO may modify the boundaries of the stipulated area if it is determined that portions of the leasehold do not include these types of areas.
- Waiver – The AO may waive this stipulation if it is determined that the entire leasehold does not include these types of areas.

Resource – Source Water Protection Areas

- Stipulation – Surface occupancy and use is prohibited within State-designated Source Water Protection Areas.
- Objective – To protect human health by minimizing the potential contamination of public water systems. Source water is untreated water from streams, rivers, lakes, or aquifers used to supply public water systems. Ensuring that source water is protected from contamination can reduce the costs of treatment and risks to public health. This stipulation would protect the State-designated Source Water Protection Areas that protect public water systems from potential contamination.
- Exception – The AO may not grant exceptions to this stipulation.
- Modification – The AO may modify the boundaries of the stipulated area if it is determined that portions of the leasehold do not include Source Water Protection Areas.
- Waiver – The AO may waive this stipulation if it is determined that the entire leasehold does not include Source Water Protection Areas.

Resource –Colonial Nesting Waterbirds

- Stipulation – Surface occupancy and use is prohibited within 0.25 mile of waterbird nesting colonies.
- Objective – To protect nesting colonial-nesting birds identified as BLM priority species for management.
- Exception – The AO may grant an exception if the action will not result in colony abandonment.
- Modification – The AO may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.25 mile of colonial nest bird sites.
- Waiver – The AO may waive this stipulation if the entire leasehold is no longer within 0.25 mile of nest sites historically used by colonial-nest birds or if the habitat has been altered to an extent, future use by colonial nesting birds is unlikely.

Resource – Raptors

- Stipulation - Surface occupancy and use is prohibited within 0.25 mile of raptor nest sites active within the preceding 7 years.

- Objective – To protect nest sites of raptors identified as BLM priority species for management (burrowing owl, golden eagle, ferruginous hawk, Swainson's hawk, prairie falcon, and northern goshawk).
- Exception – The AO may grant an exception if the action will not to result in nest territory abandonment.
- Modification – The AO may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.25 mile of raptor nest sites active within the past 7 years.
- Waiver – The AO may waive this stipulation if the entire leasehold is no longer within 0.25 mile of raptor nest sites active within the past 7 years or if the habitat has been altered to an extent, future use by nesting raptors is unlikely.

Resource – Bald Eagles

- Stipulation - Surface occupancy and use is prohibited within 0.50 mile of bald eagle nest sites active within the preceding 5 years.
- Objective – To protect nest sites and nesting activities of bald eagles, BLM priority species for management.
- Exception – The AO may grant an exception, subject to coordination with the USFWS, if the action will not to result in nest territory abandonment.
- Modification – The AO may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.50 mile of bald eagle nest sites active within the past 5 years.
- Waiver – The AO may waive this stipulation if the entire leasehold is no longer within 0.50 mile of bald eagle nest sites active within the past 5 years or if the habitat has been altered to an extent, future use by nesting bald eagles is unlikely.

Resource – Piping Plover

- Stipulation – Surface occupancy and use is prohibited in and within 0.25 mile of piping plover habitat.
- Objective – To protect the nesting habitat of the federally threatened piping plover.
- Exception – The AO, subject to consultation with the USFWS, grant an exception if the action will not result in nest territory abandonment or decrease productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior.
- Modification – The AO may modify the boundaries of the stipulated areas if portions of the leasehold are no longer within 0.25 mile of piping plover habitat.
- Waiver – The AO may waive this stipulation if the entire leasehold is no longer within 0.25 mile of piping plover nesting habitat.

Resource – Interior Least Tern

- Stipulation – Surface occupancy and use is prohibited in and within 0.25 mile of interior least tern habitat.
- Objective – To protect the nesting habitat of the federally endangered interior least tern habitat.
- Exception – The AO, subject to consultation with the USFWS, grant an exception if the action will not result in nest territory abandonment or decrease productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior.
- Modification – The AO may modify the boundaries of the stipulated areas if portions of the leasehold are no longer within 0.25 mile of interior least tern habitat.
- Waiver – The AO may waive this stipulation if the entire leasehold is no longer within 0.25 mile of interior least tern nesting habitat.

Resource – Black-footed Ferrets

- Stipulation - Surface occupancy and use is prohibited within 0.25 mile of black-footed ferret habitat (complex of prairie dog towns within 1.5 km of each other comprising a total of at least 1,500 acres).
- Objective – To protect habitat for the federally endangered black-footed ferret.

- Exception – The AO, subject to consultation with the USFWS, may grant an exception if the action will not impair the function or suitability of the black-footed ferret habitat.
- Modification - The AO, subject to confirmation from the USFWS, may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.25 mile of current or potential black-footed ferret habitat.
- Waiver – The AO, subject to consultation with the USFWS, may waive this stipulation, if the entire leasehold is no longer within 0.25 mile of current or potential black-footed ferret habitat.

Resource – Pallid Sturgeon Habitat

- Stipulation - Surface occupancy and use is prohibited within 0.25 mile of the water's edge of the Missouri and Yellowstone Rivers.
- Objective - To protect the habitat of the federally endangered pallid sturgeon.
- Exception– The AO, subject to consultation with the USFWS, may grant an exception if the action will not impair habitat of the pallid sturgeon.
- Modification – The AO may modify the boundaries of the stipulated area if portions of the leasehold are not within 0.25 mile of the water's edge of the Yellowstone or Missouri Rivers.
- Waiver – The AO may waive this stipulation if the entire leasehold is no longer within 0.25 mile of the water's edge of the Yellowstone or Missouri Rivers.

Resource – Sage-grouse Habitat – Priority Areas, West Decker Restoration Area, South Carter Restoration Area

- Stipulation – Surface occupancy and use is prohibited within sage-grouse priority areas.
- Objective – To maintain and enhance the most important of habitats needed by priority sage-grouse populations.

    (i) No waivers or modifications to a fluid mineral lease no-surface occupancy stipulation will be granted. The Authorized Officer may grant an exception to a fluid mineral lease no-surface occupancy stipulation only where the proposed action would not have direct, indirect, or cumulative effects on GRSG or its habitat; or,
    (ii) Is proposed to be undertaken as an alternative to a similar action occurring on a nearby parcel, and would provide a clear conservation gain to GRSG.

Exceptions based on conservation gain (ii) may only be considered in (a) PHMAs of mixed ownership where federal minerals underlie less than fifty percent of the total surface, or (b) areas of the public lands where the proposed exception is an alternative to an action occurring on a nearby parcel subject to a valid Federal fluid mineral lease existing as of the date of this RMP revision. Exceptions based on conservation gain must also include measures, such as enforceable institutional controls and buffers, sufficient to allow the BLM to conclude that such benefits will endure for the duration of the proposed action's impacts.

Any exceptions to this lease stipulation may be approved by the Authorized Officer only with the concurrence of the State Director. The Authorized Officer may not grant an exception unless the applicable state wildlife agency, the USFWS, and the BLM unanimously find that the proposed action satisfied (i) or (ii). Such finding shall initially be made by a team of one field biologist or other GRSG expert from each respective agency. In the event the initial finding is not unanimous, the finding may be elevated to the appropriate BLM State Director, USFWS State Ecological Services Director, and state wildlife agency head for final resolution. In the event their finding is not unanimous, the exception will not be granted. Approved exceptions will be made publically available at least quarterly.

Resource – Sage-grouse Habitat – General Habitat

- Stipulation – Surface occupancy and use is prohibited within 6/10 mile of the perimeter of sage-grouse leks.
- Objective – To maintain the integrity of general sage-grouse habitat and promote movement and genetic diversity to support sustainable sage-grouse populations.

- Exception – The AO, may grant an exception if the action will not result in sage-grouse lek abandonment.
- Modification – The AO, may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 6/10 mile of the perimeter of an active lek, or a portion of the habitat has been altered to the point sage-grouse no longer occupy the site and there is no likelihood of habitat capable of supporting sage-grouse being restored.
  Waiver – The AO, may waive this stipulation if: the entire leasehold is no longer within 6/10 mile of the perimeter of a lek, it is determined sage-grouse are no longer a BLM special status species or federally threatened or endangered, no reasonable alternative development scenario exists, or the habitat has been altered to the point sage-grouse no longer use the site and there is little likelihood of habitat capable of supporting sage-grouse being restored.

Resource – Recreation

- Stipulation – Surface occupancy and use is prohibited within developed recreation areas and undeveloped recreation areas receiving concentrated public use.
- Objective – To protect developed recreation areas and undeveloped recreation areas receiving concentrated public use.
- Exception – An exception to this stipulation may be granted by the AO if the project proponent submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified by the AO if the recreation area boundaries are changed.
- Waiver – This stipulation can be waived if the AO determines that the entire leasehold or area no longer contains developed recreation areas or undeveloped recreation areas receiving concentrated public use.

Resource – Lands with Wilderness Characteristics

- Stipulation: Surface occupancy and use is prohibited within areas that are managed to protect wilderness characteristics.
- Objective: To protect wilderness characteristics as a priority over other multiple uses.
- Exception: None
- Modification: None
- Waiver: None

Resource – National Historic Trails

- Stipulation: Surface occupancy and use is prohibited within the National Trail Management Corridor of designated National Historic Trails. Designated National Historic Trails include the Lewis and Clark Trail and the Nez Perce Trail.
- Objective: To protect the nature and purpose; trail resources, qualities, values, and associated settings; and primary use or uses of the historic trail, in accordance with National Trail System Act.
- Exception: An exception to this stipulation may be granted by the AO if the lessee or project proponent completes a comprehensive trail inventory, as outlined in Manual 6280, and presents a proposal which demonstrates resource values are not affected or that adverse impacts can be adequately mitigated to prevent impact to:

    - The nature and purposes of the National Trail.
    - National Trail resources, qualities, values, and associated settings.
    - National Trail primary use or uses.
    - The National Trail from the cumulative or trail-wide perspective.

- Modification: None
- Waiver: None

Resource – Significant Cultural Resources, NRHP-eligible Properties and Districts, and TCPs

- Stipulation – Surface occupancy and use is prohibited in the site or within the area surrounding the site where an undertaking's area of potential effect (APE) could have a potential effect on the site's setting in:

    - sites or areas designated or sites or areas that meet the criteria for allocation for designation for scientific use, conservation use, traditional use (socio-cultural use), public use, and experimental use;
    - the boundaries of sites or districts eligible for or included on the NRHP; and
    - the boundaries of TCPs, or sites or areas designated as such, or sites or areas that meet the criteria for allocation for designation for traditional use (socio-cultural use).

    Activity is prohibited in cultural properties determined to be of particular importance to American Indian groups, TCPs, or sites designated for traditional use. (Such properties include, but are not limited to, burial locations, pictograph and petroglyph sites, vision quest locations, plant-gathering locations, and areas considered sacred or used for religious purposes.)
- Objective – To protect and avoid disturbance and inadvertent impacts to significant cultural properties, districts, and their settings; NRHP-eligible properties and districts; TCPs or those designated for traditional use and the settings in which they occur; and those properties determined to be of particular importance to American Indian groups.
- Exception – An exception to this stipulation may be granted by the AO if the conditions described below are met.

    - The lessee or project proponent submits a plan demonstrating that adverse impacts or effects to the cultural property can be avoided by project redesign or relocation within the buffer area; or the project is located so that it and any associated surface disturbance will not alter the characteristics of the cultural or historic property by diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association; or so that there will be no destruction, damage, or alteration to all or part of the cultural resource's visual, atmospheric, or audible elements that could diminish the integrity of the property's significant historic features (e.g., project placed behind a hill or screened from view or by some other method within the buffer area).
    - The lessee or project proponent submits a plan demonstrating that the adverse impacts to cultural properties can be mitigated through data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the BLM, surface occupancy in the area will be prohibited.
    - The lessee or operator submits a plan demonstrating that operations will be designed or located in such a manner as to have a minimal impact to the natural setting and characteristics of the immediate area and demonstrating that adverse impacts to TCPs can be mitigated in consultation with, and to the satisfaction of, affected American Indian Tribes or American Indian groups.

- Modification – None
- Waiver – None

Resource – Paleontological Resources

- Stipulation – Surface occupancy and use is prohibited in significant paleontological localities.
- Objective – To preserve and protect significant vertebrate fossils and paleontological localities.
- Exception – An exception may be granted by the AO if the lessee or project proponent submits a plan demonstrating that the adverse impacts to paleontological localities can be mitigated through data recovery and extensive recordation. Where impacts to paleontological resources cannot be mitigated to the satisfaction of the BLM, surface occupancy on that area will be prohibited.

- Modification – None
- Waiver – None

Resource – Cultural ACECs

- Stipulation – Surface occupancy and use is prohibited within sites or areas designated for scientific use, conservation use, public use, or socio-cultural use.
- Objective – To protect those cultural properties identified for scientific use, conservation use, public use, and socio-cultural use, including the Battle Butte Battlefield, Reynolds Battlefield, Cedar Creek Battlefield, Long Medicine Wheel and Walstein ACECs.
- Exception – An exception to this stipulation may be granted by the AO if the lessee or operator submits a plan demonstrating that the cultural resource values forming the basis for designation will not be affected or that adverse impacts are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines that portions of the designated site or area can be occupied without adversely affecting the cultural resource values for which the site or area was designated.
- Waiver – This stipulation can be waived if the AO determines that all designated sites or areas within the leasehold can be occupied without adversely affecting the cultural resource values for which such sites or areas were designated or all designated sites or areas within the leasehold are allocated for other uses.

Resource – Paleontological ACECs

- Stipulation – Surface occupancy and use is prohibited within significant paleontological localities, such as the Flat Creek, and Powderville ACECs (and the paleontological component of the Long Medicine Wheel and Walstein ACECs).
- Objective – To protect significant paleontological localities.
- Exception – An exception to this stipulation may be granted by the AO if the lessee or operator submits a plan demonstrating that the paleontological resource values forming the basis for designation of the area are not affected or adverse impacts are acceptable or can be adequately mitigated.
- Modification – The boundaries of the stipulated area can be modified if the AO determines that portions of the designated area can be occupied without adversely affecting the paleontological resource values for which the area was designated or the boundaries of the designated area are changed.
- Waiver – This stipulation can be waived if the AO determines that all localities within the leasehold can be occupied without adversely affecting the paleontological resource values for which the area was designated or all localities within the leasehold are allocated for other uses.

Resource – National Historic Landmarks (NHLs) and Historic Battlefields and the Lewis and Clark National Historic Trail

- Stipulation – Surface occupancy and use and surface disturbance is prohibited within NHLs and Historic Battlefield including the following historic properties: Wolf Mountains Battlefield NHL and Battle Butte Battlefield ACEC; Reynolds Battlefield site and Reynolds Battlefield ACEC; Cedar Creek Battlefield site and Cedar Creek Battlefield ACEC; and the Long Medicine Wheel ACEC, and all significant Cultural Resources, NRHP-eligible Properties and Districts, and TCPs, NHLs and Historic Battlefields and the Lewis and Clark National Historic Trail.
- Objective – To protect inadvertent impacts to significant cultural properties, districts, and their settings; NRHP-eligible properties and districts; TCPs or those designated for traditional use and those properties determined to be of particular importance to American Indian groups, and NHLs and historic sites eligible for the NRHP and the setting or viewshed in which they occur.
- Exception: The BLM authorized officer may grant an exception if it is determined that the action is of a scale, sited in a location, or otherwise designed so that the action will not result in a more than a weak contrast rating. The Plan may be subject to consultation with Montana SHPO, applicable tribes, and other interested parties.

- Modification: The BLM authorized officer may modify the area subject to the stipulation based on local evaluation. The stipulation may be modified based on negative or positive monitoring results from similar proposed actions on similar sites. The modification may be subject to consultation with Montana SHPO, applicable tribes, and other interested parties.
- Waiver: The BLM authorized officer determines that the entire lease area does not contribute to the setting of a historic property, the waiver may be subject to consultation with Montana SHPO, applicable tribes, and other interested parties.

Resource – National Historic Landmarks (NHLs) and Historic Battlefields and the Lewis and Clark National Historic Trail

- Stipulation – Surface occupancy and use and surface disturbance is prohibited within the visible area also called the Setting Consideration Zone where the integrity of the setting is a contributing element of NRHP significance of a property, for NHLs and Historic Battlefields including the following historic properties: Wolf Mountains Battlefield NHL and Battle Butte Battlefield ACEC; Reynolds Battlefield site and Reynolds Battlefield ACEC; Cedar Creek Battlefield site and Cedar Creek Battlefield ACEC; and the Long Medicine Wheel ACEC, and all significant Cultural Resources, NRHP-eligible Properties and Districts, and TCPs, NHLs and Historic Battlefields and the Lewis and Clark National Historic Trail.
- Objective – To protect inadvertent impacts to significant cultural properties, districts, and their settings; NRHP-eligible properties and districts; TCPs or those designated for traditional use and the settings in which they occur; and those properties determined to be of particular importance to American Indian groups, and NHLs and historic sites eligible for the NRHP and the setting or viewshed in which they occur.
- Exception: The BLM authorized officer may grant an exception if it is determined that the action is of a scale, sited in a location, or otherwise designed so that the action will not result in a more than a weak contrast rating. The Plan may be subject to consultation with Montana SHPO, applicable tribes, and other interested parties.
- Modification: The BLM authorized officer may modify the area subject to the stipulation based on local evaluation. The stipulation may be modified based on negative or positive monitoring results from similar proposed actions on similar sites. The modification may be subject to consultation with Montana SHPO, applicable tribes, and other interested parties.
- Waiver: The BLM authorized officer determines that the entire lease area does not contribute to the setting of a historic property, the waiver may be subject to consultation with Montana SHPO, applicable tribes, and other interested parties.

CONTROLLED SURFACE USE

Resource – Air Resources

- Stipulation – Surface occupancy and use is subject to the requirement that each diesel-fueled non-road engine with greater than 200 horsepower design rating to be used during drilling or completion activities meets one of the following two criteria: (1) the engine was manufactured to meet USEPA NO_x emission standards for Tier 4 non-road diesel engines, or (2) the engine emits NO_x at rates less than or equal to USEPA emission standards for Tier 4 non-road diesel engines.
- Objective – To protect air resources and meet the 1-hour NO_2 NAAQS.
- Exception – An exception may be granted by the AO if air quality modeling, air quality monitoring, or other information demonstrates compliance with the NO_2 NAAQS.
- Modification – This stipulation may be modified if the EPA or the Montana Department of Environmental Quality (MDEQ) adds, deletes, or revises NO_x emission standards for drill rig, completion rig, or non-road engines.
- Waiver – The stipulation may be waived if new information demonstrates that compliance with the NO_2 NAAQS will be achieved consistently throughout the lease area. The stipulation may also be waived if the NO_2 NAAQS is revoked or otherwise rendered inapplicable to drilling/completion operations.

Resource – Soils, Sensitive Soils

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface occupancy and use, prior to surface disturbance on sensitive soils, a reclamation plan must be approved by the administrative officer. Sensitive soils are determined using a combination of slope and soil erodibility. The plan must demonstrate the following:

    - no other practicable alternatives exist for relocating the activity,
    - the activity will be located to reduce impacts to soil and water resources,
    - site productivity will be maintained or restored,
    - surface runoff and sedimentation will be adequately controlled,
    - on- and off-site areas will be protected from accelerated erosion,
    - that no areas susceptible to mass wasting would be disturbed, and
    - surface-disturbing activities will be prohibited during extended wet periods.

- Objective – To maintain the chemical, physical, and biotic properties of soils, which includes maintaining soil productivity, soil stability, and soil biotic properties. This will prevent excessive erosion, potential mass wasting, and improve the likelihood of successful reclamation..
- Exception – The administrative officer may grant an exception to this stipulation if the operator can demonstrate that the proposed action will not contribute to degradation of the soil resource (e.g. excessive soil erosion, mass wasting, and/or lost productivity) or downslope resource conditions (e.g. reduced water quality due to sedimentation).
- Modification – The administrative officer may modify the area affected by this stipulation if it is determined that portions of the leasehold do not contain sensitive soils.
- Waiver – The administrative officer may waive this stipulation if it is determined that the entire leasehold does not contain sensitive soils.

Resource – Riparian, Wetlands

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface occupancy and use within 300 feet of riparian and/or wetland areas, a plan must be approved by the AO with design features that demonstrate how all actions would maintain and/or improve the functionality of riparian/wetland areas. The plan would address:

    - potential impacts to riparian and wetland resources,
    - mitigation to reduce impacts to acceptable levels (including timing restrictions),
    - post-project restoration, and
    - monitoring (the operator must conduct monitoring capable of detecting early signs of changing riparian and/or wetland conditions).

- Objective – To protect the unique biological and hydrological features associated with riparian and wetland areas. Disturbances adjacent to riparian and/or wetland areas (including road use) can adversely impact these sensitive areas. This stipulation would protect these features from indirect effects produced within the adjacent ground. This would also encompass the floodplain along most first to third order streams.
- Exception – The AO may grant and exception to this stipulation if the operator can demonstrate that the proposed action would not adversely impact wetland or riparian function or associated water quality.
- Modification – The area affected by this stipulation can be modified by the AO if it is determined that portions of the lease area do not contain wetlands or riparian areas.
- Waiver – This stipulation can be waived by the AO if it is determined that the entire lease area does not contain wetlands or riparian areas.

Resource – Big Game Crucial Winter Range

- Stipulation – Surface occupancy and use is subject to the following operating constraint: prior to surface occupancy and use within crucial winter ranges for big game wildlife, a plan must be approved by the AO that maintains the functionality of habitat.
- Objective – To facilitate long-term maintenance of big game wildlife populations and protect white-tailed deer, mule deer, elk, and antelope crucial winter ranges from disturbance during winter use season.
- Exception – None
- Modification – The boundaries of the stipulated area can be modified if the AO determines portions of the leasehold no longer contain crucial winter range for big game wildlife.
- Waiver – This stipulation can be waived if the AO determines the entire leasehold no longer contains crucial winter range for big game wildlife.

Resource – Sharp-tailed Grouse Leks and Nesting Habitat

- Stipulation – Surface occupancy and use is subject to design features on or within 2 miles of sharp-tailed grouse lek sites to protect breeding, nesting, and brood-rearing habitats at a level capable of supporting the long-term populations associated with the lek.
- Objective – To protect sharp-tailed grouse lek sites and nesting habitats.
- Exception – The AO, in coordination with MFWP, may grant an exception if the action will not result in nest abandonment or decrease productivity, by interfering with breeding, nesting, feeding, or brood rearing activities.
- Modification – The AO may modify the boundaries of the stipulated area in coordination with MFWP, if portions of the leasehold are no longer within 2 miles of a lek active within the past 5 years, or not considered sharp-tailed grouse habitat.
- Waiver – The AO may waive this stipulation in coordination with MFWP if the entire leasehold is no longer within 2 miles of a lek, active within the past 5 years.

Resource – Bighorn Sheep Habitat

- Stipulation – Surface occupancy and use is subject to the following operating constraints: prior to surface occupancy and use a plan shall be prepared by the proponent and approved by the AO with confirmation from MFWP. The plan must demonstrate to the AO's satisfaction, the function and suitability of the habitat will not be impaired.
- Objective – To protect and maintain bighorn sheep and their habitats, a BLM priority species for management.
- Exception – The AO, in coordination with MFWP, may grant an exception if the action will not impair the function or suitability of the bighorn sheep habitat.
- Modification – The AO, in coordination with MFWP, may modify the boundaries of the stipulated area if portions are no longer bighorn sheep habitat.
- Waiver – The AO, in coordination with MFWP, may waive this stipulation if the entire leasehold is no longer bighorn sheep habitat.

Resource – Black-tailed Prairie Dogs

- Stipulation – Surface occupancy and use within black-tailed prairie dog colonies active within the past 10 years would be allowed with design features that maintain functionality of the habitat.
- Objective – To protect black-tailed prairie dog habitat, a BLM priority species for management, as well as obligate species.
- Exception – The AO may grant an exception if the action will not impair the function or suitability of the prairie dog habitat.
- Modification – The AO may modify the boundaries of the stipulated area if portions of the leasehold are no longer prairie dog habitat active within the past 10 years.

- Waiver – The AO may waive this stipulation if the entire leasehold is no longer within prairie dog colonies active within the past 10 years.

Resource – Sage-grouse General Habitat

- Stipulation – Surface occupancy and use within 2 miles of the perimeter of a lek active within the past 5 years may be restricted or prohibited. Prior to such activities, a plan to mitigate impacts to breeding or nesting sage-grouse; or breeding, nesting, or brood rearing habitat will be prepared by the proponent and implemented upon approval by the AO.
- Objective – To protect breeding, nesting and brood rearing activities and habitat.
- Exception – The AO may grant an exception if the action would not agitate or bother breeding, or nesting sage-grouse to a degree that causes or is likely to cause:
    - physical injury, or,
    - decrease productivity, by substantially interfering with normal breeding, feeding, nesting or brood rearing activities; or nest abandonment.
- Modification – The AO may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 2 miles of a lek, active within the past 5 years.
- Waiver – The AO may waive this stipulation if:
    - the entire leasehold is no longer within 2 miles of leks, active within the past 5 years,
    - it is determined sage-grouse are no longer a BLM special status species,
    - no reasonable alternative development scenario exists, or
    - the habitat has been altered to the point sage-grouse no longer use the site and there is little likelihood of habitat capable of supporting sage-grouse being restored.

Resource – Sage-grouse Habitat - Cedar Creek Restoration Area

- Stipulation – Surface occupancy and use would be allowed with design features to minimize disturbance to sage-grouse habitat.
- Objective – To minimize disturbance to sage-grouse habitat and maximize restoration efforts while allowing for the permitted uses.
- Exception – The AO may grant an exception if the proposed action will meet the goals and objectives for sage-grouse habitat.
- Modification – The AO, in coordination with MFWP, may modify the boundaries of the stipulated area if portions of the leasehold are no longer sage-grouse habitat and future use by sage-grouse is unlikely.
- Waiver – This stipulation may be waived if:
    - sage-grouse are no longer a BLM special status species,
    - no reasonable alternative development scenario exists, or
    - the habitat has been altered to the point sage-grouse no longer occupy the site and there is no reasonable likelihood of sage-grouse reoccupying the site.

Resource – Designated Sport-fish Reservoirs

- Stipulation – Surface occupancy and use would be allowed in and within 0.25 miles of sport-fish reservoirs with design features to minimize impacts.
- Objective – To protect fisheries habitat and recreational values of sport-fish reservoirs.
- Exception – An exception to this stipulation may be granted by the AO if the authorized activity will not compromise the fisheries habitat or recreational experience of those using the reservoir.
- Modification – The boundaries of the stipulated area may be modified if the AO determines portions of the leasehold or area no longer contain sport-fish reservoirs.
- Waiver – This stipulation may be waived if the AO determines the reservoir is not capable of supporting a sport fishery in the present or future.

Resource – VRM Classes II

- Stipulation – In order to retain the existing character of the landscape (VRM Class II Objective), oil and gas development activities will be located, designed, constructed, operated, and reclaimed within 2 years from initiation of construction so that activities should not attract attention of the casual observer. This stipulation does not apply to maintenance or workover activities.
- Objective – To protect visual resource values while allowing energy development and related activities to occur which have been mitigated to retain the existing character of the landscape.
- Exception – None
- Modification – None
- Waiver – None

Resource – Recreation

- Stipulation – Surface occupancy and use is subject to the following operating constraints: operations within developed and undeveloped recreation areas receiving concentrated public use must be conducted in a manner that minimizes encounters and conflicts with recreation users. Proposed activities may not alter or depreciate important recreational values located within these developed and undeveloped areas.
- Objective – To protect developed recreation areas and undeveloped recreation areas receiving concentrated public use such as the Strawberry Hill area.
- Exception – An exception to this stipulation may be granted by the AO if the project proponent submits a plan demonstrating that the impacts to recreation values and recreation users are acceptable or can be adequately mitigated.
- Modification – The area affected by this stipulation may be modified by the AO if the boundaries of the areas are changed.
- Waiver – None

Resource – Significant Cultural Resources, NRHP-eligible Properties and Districts, and TCPs, NHLs and Historic Battlefields

- Stipulation – Surface occupancy and use and surface disturbance is restricted within the Setting Consideration Zone where the integrity of the setting is a contributing element of NRHP significance of a property, for the following historic properties: Wolf Mountains Battlefield NHL and Battle Butte Battlefield ACEC; Reynolds Battlefield site and Reynolds Battlefield ACEC; Cedar Creek Battlefield site and Cedar Creek Battlefield ACEC; and the Long Medicine Wheel ACEC, and all significant Cultural Resources, NRHP-eligible Properties and Districts, and TCPs, NHLs and Historic Battlefields and the Lewis and Clark National Historic Trail. Prior to surface disturbance, occupancy or use within the Setting Consideration Zone of the identified historic properties a mitigation plan (Plan) must be submitted to the BLM by the applicant as a component of the APD (BLM Form 3160-3) or Sundry Notice (BLM Form 3160-5) – Surface Use Plan of Operations. The operator may not initiate surface-disturbing activities unless the BLM AO has approved the Plan or approved it with conditions. (b) The Plan must demonstrate to the AO's satisfaction that the infrastructure will either not be visible or will result in a weak contrast rating and would not have an adverse effect on the setting of the historic properties, ensuring the setting of historic properties.
- Objective – To protect inadvertent impacts to significant cultural properties, districts, and their settings; NRHP-eligible properties and districts; TCPs or those designated for traditional use and the settings in which they occur; and those properties determined to be of particular importance to American Indian groups, and NHLs and historic sites eligible for the NRHP and the setting or viewshed in which they occur.
- Exception: The BLM AO may grant an exception if it is determined that the action is of a scale, sited in a location, or otherwise designed so that the action will not result in a more than a weak contrast rating. The Plan may be subject to consultation with Montana SHPO, applicable tribes, and other interested parties.

- Modification: The BLM AO may modify the area subject to the stipulation based on local evaluation. The stipulation may be modified based on negative or positive monitoring results from similar proposed actions on similar sites. The modification may be subject to consultation with Montana SHPO, applicable tribes, and other interested parties.
- Waiver: The BLM AO determines that the entire lease area does not contribute to the setting of a historic property, the waiver may be subject to consultation with Montana SHPO, applicable tribes, and other interested parties.

TIMING LIMITATION

Resource – Raptors

- Stipulation - Surface use is prohibited within 0.50 mile of active raptor nest sites from March 1 through July 31.
- Objective – To protect nesting activities associated with raptors identified as BLM priority species for management.
- Exception – The AO may grant an exception if the action will not to result in nest territory abandonment or decrease productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior.
- Modification – The AO may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.50 mile of an active raptor nest.
- Waiver – The AO may waive this stipulation if the entire leasehold is no longer within 0.50 mile of an active raptor nest.

Resource – Colonial Nesting Waterbirds

- Stipulation - Surface use is prohibited within 0.50 mile of waterbird nesting colonies from April 1 through July 15.
- Objective – To protect nesting activities associated with colonial-nesting birds identified as BLM priority species for management.
- Exception – The AO may grant an exception if the action will not result in nest territory abandonment or decrease productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior.
- Modification – The AO may modify the boundaries of the stipulated area if portions of the leasehold are no longer within 0.50 mile of an active nesting colony.
- Waiver – The AO may waive this stipulation if the entire leasehold is no longer within 0.50 mile of an active colonial nesting bird colony.

LEASE NOTICE

Resource - Air Resource Analysis

The lessee/operator is given notice that prior to project-specific approval, additional air resource analyses may be required in order to comply with the NEPA, FLPMA, and/or other applicable laws and regulations. Analyses may include equipment and operations information, emission inventory development, dispersion modeling or photochemical grid modeling for air quality and/or air quality related value impact analysis, and/or emission control determinations. These analyses may result in the imposition of additional project-specific control measures to protect air resources.

Resource - Special Status Species

The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or

disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or requirements of the ESA as amended, 16 U.S.C. § et seq., including completion of any required procedure for conference or consultation.

Resource - Migratory Bird Treaty Act

The Operator is responsible for compliance with provisions of the Act by implementing one of the following measures; a) avoidance by timing; ground disturbing activities will not occur from April 15 to July 15, b) habitat manipulation; render proposed project footprints unsuitable for nesting prior to the arrival of migratory birds (blading or pre-clearing of vegetation must occur prior to April 15 within the year and area scheduled for activities between April 15 and July 15 of that year to deter nesting, or c) survey-buffer-monitor; surveys will be conducted by a BLM approved biologist within the area of the proposed action and a 300 foot buffer from the proposed project footprint between April 15 to July 15 if activities are proposed within this timeframe. If nesting birds are found, activities would not be allowed within 0.1 miles of nests until after the birds have fledged. If active nests are not found, construction activities must occur within 7 days of the survey. If this does not occur, new surveys must be conducted. Survey reports will be submitted to the appropriate BLM Office.

Resource - Black-footer Ferret Surveys

Surface occupancy or use is subject to the following special operating constraints: prior to surface disturbance, prairie dog colonies and complexes 80 acres or more in size will be examined to determine the presence or absence of black-footed ferrets. The findings of this examination may result in some restrictions to the operator’s plans or may even preclude use and occupancy. The lessee or operator may, at their own option, conduct an examination to determine the presence or absence of black-footed ferrets. This examination must be done by or under the supervision of a qualified resource specialist approved by the surface management agency. An acceptable report must be provided to the surface management agency documenting the presence or absence of black footed ferrets and identifying the anticipated effects of the proposed action on the black-footed ferret and its habitat.

Resource - Cultural Resources Setting Consideration Zones

This lease is known to contain historic properties or resources protected under NHPA that contain a Setting Consideration Zone where the integrity of the setting is known to be an important contributing element of NRHP significance of the property, and applies to the following historic properties: Wolf Mountains Battlefield NHL and Battle Butte Battlefield ACEC; Reynolds Battlefield site and Reynolds Battlefield ACEC; Cedar Creek Battlefield site and Cedar Creek Battlefield ACEC; and the Long Medicine Wheel ACEC, and all significant Cultural Resources, NRHP-eligible Properties and Districts, and TCPs, NHLs and Historic Battlefields and the Lewis and Clark National Historic Trail.

Resource – Setback from Human Occupied Residences Requirement

The lease area may contain human occupied residences. Under Regulation 43 CFR 3101.1-2 and terms of the lease (BLM Form 3100-11), the authorized officer may require reasonable measures to minimize adverse impacts to other resource values, land uses, and users not addressed in lease stipulations at the time operations are proposed. Such reasonable measures may include, but are not limited to, modification of siting or design of facilities, which may require relocating proposed operations up to 200 meters, but not off the leasehold.

The setback requirement of 500 feet from human occupied residences has been established based upon the best information available. The following condition of approval may be applied as a result of the Application for Permit to Drill (APD) process during the on-site inspection and the environmental review unless an acceptable plan for mitigation of impacts is reached between the resident, lessee and BLM:

- **Facilities will not be allowed within 500 feet of human occupied residences.**

The intent of this Lease Notice is to provide information to the lessee that would help design and locate oil and gas facilities to preserve the aesthetic qualities around human occupied residences.

REASONABLY FORESEEABLE DEVELOPMENT SCENARIO FOR RESOURCE MANAGEMENT PLAN ALTERNATIVES

The BLM completed an RFD projection that technically analyzed the oil and gas resources known to occur and potentially occur within the planning area to project future development potential and activity levels for 2011 through 2030 (BLM, 2013). The RFD analysis for the planning area, including American Indian Reservation lands, makes a baseline projection that assumes all potentially productive areas are open to leasing under the standard lease terms and conditions. The RFD evaluation and projections presented below review and analyze past, present, and potential future exploratory, development, and production operations and activities. It also presents occurrence potential for oil and gas, CBNG, and deep oil and gas (at depths greater than 13,000 feet) within the planning area.
Operator and MBOGC feedback and data were compiled and in conjunction with USGS Assessments, current development, and resource expertise to help project locations and amounts of future drilling activity within the planning area. A review of available technical data was also conducted to help make these projections (BLM, 2013). Approximate acres and well numbers are used in RFD projections due to the scaling and precision parameters associated with the Geographic Information System (GIS). The method used to determine the number of new wells projected to be drilled during the life of the plan has been discussed in detail in the BLM RFD technical review document (BLM, 2013).

RFD BASELINE

Number of Wells Projected to be Drilled 2011 to 2030

For a baseline, unconstrained RFD projection (BLM, 2004) this RFD estimates that during the 20-year planning cycle of 2011 to 2030, approximately 7,524 wells would be drilled in the planning area (Table 2), of which 1,699 would be federally administered wells (Table 3). Of the 7,524 wells, up to 1,200 of these wells would be CBNG wells, with 100 wells located in the Williston Basin and 1,100 CBNG wells located in the Powder River Basin of Montana. Of the remaining 6,324 projected new wells to be drilled, 3,461 would be new oil wells and 2,863 would be new conventional gas wells. The projected number of wells to be drilled was estimated by county in Table 4. For BLM administered wells, the baseline RFD does not include projected well numbers for minerals privately owned, owned by the State of Montana, owned by local governments, or lands administered by other federal agencies.

TABLE 2.
NUMBER OF WELLS PROJECTED TO BE DRILLED
IN THE PLANNING AREA FOR THE BASELINE SCENARIO (2011 - 2030)

Development Potential	Planning Area Acres and Percentage (%)	Federal Oil and Gas Mineral Acres and Percentage (%)	Number of New Wells
High	6,043,000 (23%)	738,000 (15%)	3,720
Medium	6,655,000 (26%)	1,092,000 (22%)	2,390
Low	13,120,000 (51%)	3,178,000 (63%)	1,414
Total (approximate)	**25,818,000**	**5,008,000**	**7,524**

Source: BLM 2013

TABLE 3.
NUMBER OF WELLS PROJECTED TO BE DRILLED
FOR THE BASELINE BY DEVELOPMENT POTENTIAL AND WELL TYPE (2011 - 2030)

Development Potential	Oil Wells		Conventional Gas Wells		CBNG Wells		Total New Wells To Be Drilled	
	Total	Federal	Total	Federal	Total	Federal	Total	Federal
High	1,711	209	1,414	173	595	299	3,720	681
Medium	1,100	180	910	149	380	109	2,390	438
Low	650	157	539	131	225	25	1,414	313
Totals	**3,461**	**546**	**2,863**	**453**	**1,200**	**433**	**7,524**	**1,432**

Source: BLM 2013

TABLE 4.
NUMBER OF WELLS
PROJECTED TO BE DRILLED FOR THE BASELINE BY COUNTY (2011 - 2030)

	Baseline Total			Baseline Federal		
County	Oil Wells	Gas Wells	CBNG Wells	Oil Wells	Gas Wells	CBNG Wells
Big Horn	75	62	142	36	30	62
Carter	180	149	0	90	74	0
Custer	120	100	0	27	22	0
Daniels	236	195	0	3	3	0
Dawson	247	204	0	17	14	0
Fallon	128	106	0	18	15	0
Garfield	161	133	0	49	40	0
McCone	231	191	0	31	26	0
Powder River	432	357	734	176	146	323
Prairie	70	58	0	26	22	0
Richland	350	290	45	23	19	3
Roosevelt	429	355	55	4	4	1
Rosebud	215	178	224	34	28	44
Sheridan	305	252	0	5	4	0
Treasure	31	26	0	1	1	0
Valley	157	129	0	0	0	0
Wibaux	94	78	0	6	5	0
Totals	**3,461**	**2,863**	**1,200**	**546**	**453**	**433**

Source: BLM 2013

Projected Baseline Surface Disturbance 2011 to 2030

Tables 5 and 6 project short-term and long-term disturbance associated with existing wells and projected drilling activity for 2011 through 2030 from the projected well numbers listed in Table 3. Acres of disturbance associated with BLM-administered wells can be located on federally administered surface or on non-federally administered surface (split estate lands). The estimated acres of disturbance associated with the access road, utility corridor, and well pad for drilled and producing wells are based on the average disturbance of federally administered oil, gas, and CBNG wells permitted in the MCFO within the last five years. It is standard practice for oil and gas operations to combine the access road and pipeline/utility lines (oil/gas/CBNG, water, and power) within the same corridor to minimize surface disturbance. Surface disturbance associated with major transportation lines, processing production areas, produced water management areas may be permitted in association with another federal or nonfederal well permit; therefore, these acres are not included in the acres of surface disturbance per well or access road/utility corridor.

Table 5 shows the projected number of new exploratory wells (7,524 total wells with 1,432 BLM-administered wells) that could be drilled in the planning area from 2011 to 2030. There are an additional 5,168 existing active wells (1,112 gas; 1,064 CBNG; and 2,992 oil) (MBOGC, 2011). Of those 5,168 existing wells, 930 total wells (378 gas, 179 CBNG, and 373 oil wells) are BLM-administered wells. Table 5 also shows associated acres of total surface disturbance (short-term disturbance) directly associated with all new and existing wells. Approximately 18,503 acres of new and existing short-term surface disturbance (2,725 acres of disturbance associated with BLM-administered wells) would occur if all 7,524 projected wells were drilled.

TABLE 5.
DISTURBANCE ASSOCIATED WITH NEW DRILLED WELLS, EXISTING WELLS, AND PROJECTED ACTIVE WELLS FOR THE BASELINE SCENARIO (SHORT-TERM DISTURBANCE) 2011 - 2030

Type	Wells		Acres of Surface Disturbance			
	Total	BLM-administered	Road/Utility Corridor	Well Pad	Total	BLM-administered
New Exploratory CBNG Wells	1,200	433	0.55	0.25	960	347
New Exploratory Gas Wells	2,863	453	0.55	0.50	3,006	476
New Exploratory Oil Wells	3,461	546	1.20	3.00	14,537	2,294
Total New Exploratory Wells	**7,524**	**1,432**			**18,503**	**3,117**
Existing CBNG	1,064	179	0.22	0.15	394	67
Existing Active Gas Wells	1,112	378	0.22	0.25	523	178
Existing Active Oil Wells	2,992	373	0.48	1.00	4,428	552
Total Existing Wells	**5,168**	**930**			**5,345**	**797**
Total Active Wells	**12,692**	**2,362**	**Total Short-term Disturbance**		**23,848**	**3,914**

Source: BLM 2013

Table 6 estimates the projected number of new producing wells remaining in production after all new exploratory wells are drilled and all dry holes are abandoned and reclaimed (6,114 total new producing wells with 1,220 of those being BLM-administered wells). There are approximately 5,168 existing active wells of which 930 are active BLM-administered wells.

TABLE 6.
DISTURBANCE ASSOCIATED WITH NEW PRODUCING WELLS FOR THE BASELINE SCENARIO (LONG-TERM DISTURBANCE) 2011 - 2013

Type	Wells		Acres of Surface Disturbance			
	Total	BLM-administered	Road/Utility Corridor	Well Pad	Total	BLM-administered
New Producing CBNG Wells	1,152	416	0.22	0.15	426	154
New Producing Gas Wells	2,262	358	0.22	0.25	1,063	158
New Producing Oil Wells	2,700	426	0.48	1.00	3,996	631
Total New Producing Wells	**6,114**	**1,626**			**5,485**	**943**
Existing CBNG	1,064	179	0.22	0.15	394	66
Existing Gas Wells	1,112	378	0.22	0.25	523	178
Existing Oil Wells	2,992	373	0.48	1.00	4,428	552
Total Existing Wells	**5,168**	**930**			**5,345**	**796**
Total Active Wells	**11,282**	**2,2,556**	**Total Long-term Disturbance**		**10,830**	**1,1,739**

Source: BLM 2013

Table 6 also estimates unreclaimed associated acres of total surface disturbance (long-term disturbance). Approximately 5,485 acres of new unreclaimed surface disturbance (862 acres of unreclaimed acres associated with BLM-administered wells) could remain in the long term. Total unreclaimed long-term surface disturbance (all well types) would be 10,830 acres, with 1,658 acres associated with BLM-administered wells.

RESOURCE MANAGEMENT PLAN ALTERNATIVES

The RMP contains five management alternatives. Each alternative contains management imposed restrictions that may negatively affect oil and gas development. These restrictions can effectively decrease the baseline estimated number of wells projected to be drilled within the planning area. For each alternative, the imposed restrictions have been analyzed and the estimated number of resulting wells to be drilled that could be reduced from the baseline total has been projected. For BLM administered wells, the RFD for each alternative does not include projected well numbers for minerals privately owned, owned by the State of Montana, owned by local governments, or for lands administered by other federal agencies.

For each alternative, GIS was used to calculate restricted acres within each development potential, the projected number of wells to be drilled within each development potential, short-term surface disturbance, and long-term surface disturbance. The restricted acres were based on management actions described in Chapter 2 Table 2-1.

Procedures Used to Determine Well Location Reductions

Well location reductions from the baseline RFD scenario for each alternative, are due to proposed management restrictions. Restrictions applied to each alternative can affect oil and gas development activities by not allowing leasing, not allowing surface occupancy, controlling surface use, or placing restrictive stipulations on COAs of federal applications to drill. Reduced oil and gas activities result in increased exploration and development costs, fewer drilled wells, and reduced production. For RFD scenario analysis purposes, the restrictions for the five alternatives analyzed were separated into four categories designated A, B, C, and D. Restrictions on drilling are progressively more limiting from restriction category A to restriction category D and are:

Restriction Category A - areas open to leasing. Restrictions are relatively minor and result in standard lease terms and conditions that are applied to every federal oil and gas lease sold in the planning area. These restrictions are considered to have little to no effect on the number of future well locations or production for any alternative.

Restriction Category B - areas open to leasing subject to relatively minor constraints. These restrictions are considered as CSU or Timing Limitation stipulations. These restrictions can have a moderate effect such as multiple, consecutive timing restrictions for protection of wildlife values (e.g., crucial winter range, raptor nesting habitat, or sage-grouse strutting grounds).

Restriction Category C - areas open to leasing subject to major constraints. These restrictions are considered as NSO stipulations. These restrictions can have a moderate to severe effect on the location of wells; such as NSO stipulations on an area more than 40 acres in size or requirements that viewsheds be protected, thus requiring that well locations and production facilities not be visible from areas such as historic trails. Overlapping minor constraints may also severely limit the future development of oil and gas resources.

Restriction Category D - areas closed to leasing. These are areas where a determination is made that other land uses or resource values cannot be adequately protected with even the most restrictive lease stipulations. Because areas are closed to leasing, this category has the most severe restrictions and would preclude future oil and gas activity and production.

Estimates of future reductions in well locations from the baseline reasonable foreseeable development projection were determined as described below:

An estimate of the number of well locations per township acres (average well density) that could be drilled in each development potential category over the 20-year life of the plan was made for conventional oil and gas development activity and for CBNG development activity.

The acres of federal oil and gas ownership for each area development potential were determined using GIS software. Acres of non-federal oil and gas minerals were not included because proposed RMP decisions will only apply to federal oil and gas minerals. It was assumed that development on non-federal minerals will occur as estimated in the baseline foreseeable development projection.

Next, the areas covered by each restriction category (B, C, or D) within the high, medium, or low development potential areas for oil, gas, and CBNG potential were calculated using GIS software. The area within category A was not calculated, because it was previously determined that this type of restriction would have no significant effect on the number of well locations for any alternative.

After the acres of federal oil and gas were calculated for each alternative in each restriction category, the percent reduction in well locations for each development potential in restriction Category C was estimated. This estimate is a percent of the well locations that would not be drilled in each area due to the specific category of restriction, Category C (NSO). The percent reduction for each development potential was based on the spatial layout of Category C (NSO) restriction, unleased federal oil and gas mineral, and existing federal leases (see Map 40) within each development potential area, and the feasibility to directionally/horizontally drill in the area. Based on the spatial layouts, it was estimated that 30 percent of the federal oil and gas wells in high development potential would not be drilled within Category C (NSO) acres, 40 percent for medium development potential, and 50 percent. Because CBNG development requires large contiguous areas to properly develop a plan of development area, the percent reduction was estimated to be 5 percent higher for each development potential.

The number of projected wells and acres were calculated using the method above for each alternative in Tables 7 to 26.

ALTERNATIVE A

TABLE 7.
ALTERNATIVE A RESTRICTIONS BY DEVELOPMENT POTENTIAL (ACRES)

Restriction	***High***	***Medium***	***Low***	***Total Acres***
Closed	0	0	86,664	86,664
NSO	206,849	357,120	909,407	1,473,375
CSU	349,662	597,450	1,476,296	2,423,409
Timing	211,855	486,967	1,149,647	1,848,469
Lease Terms	195,850	151,727	733,213	1,080,790

Source: BLM 2013

TABLE 8.
ALTERNATIVE A PROJECTED NUMBER OF WELLS TO BE DRILLED 2011 - 2030

	Oil Wells		**Gas Wells**		**CBNG Wells**		**Total Wells Drilled**		**Total Wells Not Drilled**
	Total	**Federal**	**Total**	**Federal**	**Total**	**Federal**	**Total**	**Federal**	**Federal**
High	1,7697	195	1,403	162	574	278	3,674	635	46
Medium	1,079	159	893	132	367	96	2,339	387	51
Low	625	132	517	109	222	22	1,364	263	50
Totals	**3,401**	**486**	**2,813**	**403**	**1,163**	**396**	**7,497**	**1,285**	**147**

Source: BLM 2013

TABLE 9.
DISTURBANCE ASSOCIATED
WITH NEW DRILLED WELLS, EXISTING WELLS, AND PROJECTED
ACTIVE WELLS FOR ALTERNATIVE A (SHORT-TERM DISTURBANCE) 2011 - 2030

Type	Wells		Acres of Surface Disturbance			
	Total	BLM-administered	Road/Utility Corridor	Well Pad	Total	BLM-administered
New Exploratory CBNG Wells	1,163	396	0.55	0.25	959	317
New Exploratory Gas Wells	2,813	403	0.55	0.50	2,993	423
New Exploratory Oil Wells	3,401	486	1.20	3.00	14,482	2,041
Total New Exploratory Wells	**7,377**	**1,285**			**18,168**	**2,781**
Existing CBNG	1,064	179	0.22	0.15	394	67
Existing Active Gas Wells	1,112	378	0.22	0.25	523	178
Existing Active Oil Wells	2,992	373	0.48	1.00	4,428	552
Total Existing Wells	**5,168**	**930**			**5,345**	**797**
Total Active Wells	**12,545**	**2,215**	**Total Short-term Disturbance**		**23,513**	**3,578**

Source: BLM 2013

TABLE 10. DISTURBANCE ASSOCIATED WITH NEW
PRODUCING WELLS FOR ALTERNATIVE A (LONG-TERM DISTURBANCE) 2011 - 2030

Type	Wells		Acres of Surface Disturbance			
	Total	BLM-administered	Road/Utility Corridor	Well Pad	Total	BLM-administered
New Producing CBNG Wells	1,116	381	0.22	0.15	413	141
New Producing Gas Wells	2,222	318	0.22	0.25	1,044	150
New Producing Oil Wells	2,653	380	0.48	1.00	3,926	562
Total New Producing Wells	**5,991**	**1,079**			**5,383**	**853**
Existing CBNG	1,064	179	0.22	0.15	394	66
Existing Gas Wells	1,112	378	0.22	0.25	523	178
Existing Oil Wells	2,992	373	0.48	1.00	4,428	552
Total Existing Wells	**5,168**	**930**			**5,345**	**797**
Total Active Wells	**11,159**	**2,009**	**Total Long-term Disturbance**		**10,728**	**1,650**

Source: BLM 2013

ALTERNATIVE B

TABLE 11. ALTERNATIVE B RESTRICTIONS BY DEVELOPMENT POTENTIAL (ACRES)

Restriction	*High*	*Medium*	*Low*	*Total Acres*
Closed	96,485	246,513	1,229,178	1,572,176
NSO	41,1084	556,589	1,127,143	2,094,816
CSU	185,677	252,273	704,843	1,142,793
Timing	0	0	0	0
Lease Terms	44,836	38,373	127,792	211,001

Source: BLM 2013

TABLE 12.
ALTERNATIVE B PROJECTED NUMBER OF WELLS TO BE DRILLED 2011 - 2030

	Oil Wells		Gas Wells		CBNG Wells		Total Wells Drilled		Total Wells Not Drilled
	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Federal
High	1,649	147	1,362	121	493	197	3,504	465	216
Medium	1,023	103	846	85	335	64	2,205	252	186
Low	562	69	465	57	216	16	1,243	142	171
Totals	**3,234**	**319**	**2,673**	**263**	**1,045**	**277**	**6,953**	**859**	**573**

Source: BLM 2013

TABLE 13.
DISTURBANCE ASSOCIATED WITH NEW DRILLED WELLS, EXISTING WELLS, AND PROJECTED ACTIVE WELLS FOR ALTERNATIVE B (SHORT-TERM DISTURBANCE) 2011 - 2030

Type	Wells		Acres of Surface Disturbance			
	Total	BLM-administered	Road/Utility Corridor	Well Pad	Total	BLM-administered
New Exploratory CBNG Wells	1,045	277	0.55	0.25	836	222
New Exploratory Gas Wells	2,673	263	0.55	0.50	2,807	276
New Exploratory Oil Wells	3,234	319	1.20	3.00	13,583	1,340
Total New Exploratory Wells	**6,953**	**859**			**17,226**	**1,838**
Existing CBNG	1,064	179	0.22	0.15	394	67
Existing Active Gas Wells	1,112	378	0.22	0.25	523	178
Existing Active Oil Wells	2,992	373	0.48	1.00	4,428	552
Total Existing Wells	**5,168**	**930**			**5,345**	**797**
Total Active Wells	**12,121**	**1,789**	**Total Short-term Disturbance**		**22,571**	**2,635**

Source: BLM 2013

TABLE 14.
DISTURBANCE ASSOCIATED WITH NEW PRODUCING WELLS FOR ALTERNATIVE B (LONG-TERM DISTURBANCE) 2011 - 2030

Type	Wells		Acres of Surface Disturbance			
	Total	BLM-administered	Road/Utility Corridor	Well Pad	Total	BLM-administered
New Producing CBNG Wells	1,003	266	0.22	0.15	371	98
New Producing Gas Wells	2,112	208	0.22	0.25	993	98
New Producing Oil Wells	2,523	249	0.48	1.00	3,734	369
Total New Producing Wells	**5,638**	**723**			**5,044**	**565**
Existing CBNG	1,064	179	0.22	0.15	394	67
Existing Gas Wells	1,112	378	0.22	0.25	523	178
Existing Oil Wells	2,992	373	0.48	1.00	4,428	552
Total Existing Wells	**5,168**	**930**			**5,345**	**797**
Total Active Wells	**10,806**	**1,653**	**Total Long-term Disturbance**		**10,389**	**1,362**

Source: BLM 2013

ALTERNATIVE C

TABLE 15.
ALTERNATIVE C RESTRICTIONS BY DEVELOPMENT POTENTIAL (ACRES)

Restriction	*High*	*Medium*	*Low*	*Total Acres*
Closed	0	0	83,160	83,160
NSO	36,162	61,662	174,695	272,519
CSU	490,203	706,166	1,783,681	2,980,049
Timing	0	0	0	0
Lease Terms	211,269	324,117	1,139,892	1,675,278

Source: BLM 2013

TABLE 16.
ALTERNATIVE C PROJECTED NUMBER OF WELLS TO BE DRILLED 2011 - 2030

	Oil Wells		**Gas Wells**		**CBNG Wells**		**Total Wells Drilled**		**Total Wells Not Drilled**
	Total	**Federal**	**Total**	**Federal**	**Total**	**Federal**	**Total**	**Federal**	**Federal**
High	1,708	206	1,411	170	589	293	3,708	669	12
Medium	1,096	176	907	146	374	102	2,378	425	13
Low	642	149	532	124	224	24	1,398	297	16
Totals	**3,446**	**531**	**2,850**	**440**	**1,188**	**420**	**7,484**	**1,391**	**41**

Source: BLM 2013

TABLE 17.
DISTURBANCE ASSOCIATED WITH NEW DRILLED WELLS, EXISTING WELLS, AND PROJECTED ACTIVE WELLS FOR ALTERNATIVE C (SHORT-TERM DISTURBANCE) 2011 - 2030

Type	**Wells**		**Acres of Surface Disturbance**			
	Total	**BLM-administered**	**Road/Utility Corridor**	**Well Pad**	**Total**	**BLM-administered**
New Exploratory CBNG Wells	1,188	420	0.55	0.25	950	336
New Exploratory Gas Wells	2,850	440	0.55	0.50	2,993	462
New Exploratory Oil Wells	3,446	531	1.20	3.00	14,473	2,230
Total New Exploratory Wells	**7,484**	**1,391**			**18,416**	**3,028**
Existing CBNG	1,064	179	0.22	0.15	394	67
Existing Active Gas Wells	1,112	378	0.22	0.25	523	178
Existing Active Oil Wells	2,992	373	0.48	1.00	4,428	552
Total Existing Wells	**5,168**	**930**			**5,345**	**797**
Total Active Wells	**12,652**	**2,321**	**Total Short-term Disturbance**		**23,761**	**3,825**

Source: BLM 2013

TABLE 18.
DISTURBANCE ASSOCIATED WITH NEW PRODUCING WELLS FOR ALTERNATIVE C (LONG-TERM DISTURBANCE) 2011 - 2030

Type	Wells		Acres of Surface Disturbance			
	Total	BLM-administered	Road/Utility Corridor	Well Pad	Total	BLM-administered
New Producing CBNG Wells	1,140	403	0.22	0.15	422	149
New Producing Gas Wells	2,252	348	0.22	0.25	1,058	164
New Producing Oil Wells	2,688	414	0.48	1.00	3,978	613
Total New Producing Wells	**6,080**	**1,165**			**5,458**	**926**
Existing CBNG	1,064	179	0.22	0.15	394	67
Existing Gas Wells	1,112	378	0.22	0.25	523	178
Existing Oil Wells	2,992	373	0.48	1.00	4,428	552
Total Existing Wells	**5,168**	**930**			**5,345**	**797**
Total Active Wells	**11,248**	**2,095**	**Total Long-term Disturbance**		**10,803**	**1,723**

Source: BLM 2013

ALTERNATIVE D

TABLE 19.
ALTERNATIVE D RESTRICTIONS BY DEVELOPMENT POTENTIAL (ACRES)

Restriction	*High*	*Medium*	*Low*	*Total Acres*
Closed	0	0	83,160	83,160
NSO	2,375	36,381	60,686	99,442
CSU	594,933	902,071	2,622,992	4,119,996
Timing	0	0	0	0
Lease Terms	142,071	417,672	155,421	715,163

Source: BLM 2013

TABLE 20.
ALTERNATIVE D PROJECTED NUMBER OF WELLS TO BE DRILLED 2011 - 2030

	Oil Wells		Gas Wells		CBNG Wells		Total Wells Drilled		Total Wells Not Drilled
	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Federal
High	1,711	209	1,414	173	595	299	3,720	681	7
Medium	1,098	178	909	148	377	106	2,384	432	6
Low	645	152	534	126	225	25	1,404	303	3
Totals	**3,454**	**539**	**2,857**	**447**	**1,197**	**430**	**7,508**	**1,416**	**16**

Source: BLM 2013

TABLE 21.
DISTURBANCE ASSOCIATED WITH NEW DRILLED WELLS, EXISTING WELLS, AND PROJECTED ACTIVE WELLS FOR ALTERNATIVE D (SHORT-TERM DISTURBANCE) 2011 - 2030

Type	Wells		Acres of Surface Disturbance			
	Total	BLM-administered	Road/Utility Corridor	Well Pad	Total	BLM-administered
New Exploratory CBNG Wells	1,197	430	0.55	0.25	957	344
New Exploratory Gas Wells	2,857	447	0.55	0.50	2,999	469
New Exploratory Oil Wells	3,454	539	1.20	3.00	14,509	2,266
Total New Exploratory Wells	**7,507**	**1,415**			**18,466**	**3,079**
Existing CBNG	1,064	179	0.22	0.15	394	67
Existing Active Gas Wells	1,112	378	0.22	0.25	523	178
Existing Active Oil Wells	2,992	373	0.48	1.00	4,428	552
Total Existing Wells	**5,168**	**930**			**5,345**	**797**
Total Active Wells	**12,675**	**2,345**	**Total Short-term Disturbance**		**23,811**	**3,876**

Source: BLM 2013

TABLE 22.
DISTURBANCE ASSOCIATED WITH NEW PRODUCING WELLS FOR ALTERNATIVE D (LONG-TERM DISTURBANCE) 2011 - 2030

Type	Wells		Acres of Surface Disturbance			
	Total	BLM-administered	Road/Utility Corridor	Well Pad	Total	BLM-administered
New Producing CBNG Wells	1,150	417	0.22	0.15	426	153
New Producing Gas Wells	2,257	356	0.22	0.25	1,783	166
New Producing Oil Wells	2,602	425	0.48	1.00	3,851	623
Total New Producing Wells	**6,009**	**1,198**			**6,060**	**941**
Existing CBNG	1,064	179	0.22	0.15	394	67
Existing Gas Wells	1,112	378	0.22	0.25	523	178
Existing Oil Wells	2,992	373	0.48	1.00	4,428	552
Total Existing Wells	**5,168**	**930**			**5,345**	**797**
Total Active Wells	**11,177**	**2,128**	**Total Long-term Disturbance**		**11,405**	**1,738**

Source: BLM 2013

ALTERNATIVE E

TABLE 23.
ALTERNATIVE E RESTRICTIONS BY DEVELOPMENT POTENTIAL (ACRES)

Restriction	*High*	*Medium*	*Low*	*Total Acres*
Closed	0	0	83,160	83,160
NSO	163,857	464,371	1,324,026	1,952,253
CSU	483,875	565,675	1,449,137	2,498,686
Timing	1,313	796	4,877	6,986
Lease Terms	91,649	63,906	328,231	483,786

Source: BLM 2013

TABLE 24.
ALTERNATIVE E PROJECTED NUMBER OF WELLS TO BE DRILLED 2011 - 2030

	Oil Wells		Gas Wells		CBNG Wells		Total Wells Drilled		Total Wells Not Drilled
	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Federal
High	1,697	195	1,402	161	576	280	3,675	636	**80**
Medium	1,070	150	885	124	376	96	2,322	370	**68**
Low	614	121	508	100	224	24	1,346	245	**33**
Totals	**3,381**	**466**	**2,795**	**385**	**1,167**	**400**	**7,343**	**1,251**	**181**

Source: BLM 2013

TABLE 25.
DISTURBANCE ASSOCIATED WITH NEW DRILLED WELLS, EXISTING WELLS, AND PROJECTED ACTIVE WELLS FOR ALTERNATIVE E (SHORT-TERM DISTURBANCE) 2011 - 2030

Type	Wells		Acres of Surface Disturbance			
	Total	BLM-administered	Road/Utility Corridor	Well Pad	Total	BLM-administered
New Exploratory CBNG Wells	1,167	400	0.55	0.25	934	320
New Exploratory Gas Wells	2,795	385	0.55	0.50	2,935	404
New Exploratory Oil Wells	3,381	466	1.20	3.00	14,200	1,957
Total New Exploratory Wells	**7,343**	**1,251**			**18,069**	**2,681**
Existing CBNG	1,064	179	0.22	0.15	394	67
Existing Active Gas Wells	1,112	378	0.22	0.25	523	178
Existing Active Oil Wells	2,992	373	0.48	1.00	4,428	552
Total Existing Wells	**5,168**	**930**			**5,345**	**797**
Total Active Wells	**12,511**	**2,181**	**Total Short-term Disturbance**		**23,412**	**3,478**

Source: BLM 2013

TABLE 26.
DISTURBANCE ASSOCIATED WITH NEW PRODUCING WELLS FOR ALTERNATIVE E (LONG-TERM DISTURBANCE) 2011 - 2030

Type	Wells		Acres of Surface Disturbance			
	Total	BLM-administered	Road/Utility Corridor	Well Pad	Total	BLM-administered
New Producing CBNG Wells	1,120	384	0.22	0.15	414	142
New Producing Gas Wells	2,208	305	0.22	0.25	1,038	143
New Producing Oil Wells	2,558	364	0.48	1.00	3,786	538
Total New Producing Wells	**5,886**	**1,053**			**5,238**	**824**
Existing CBNG	1,064	179	0.22	0.15	394	67
Existing Gas Wells	1,112	378	0.22	0.25	523	178
Existing Oil Wells	2,992	373	0.48	1.00	4,428	552
Total Existing Wells	**5,168**	**930**			**5,345**	**797**
Total Active Wells	**11,054**	**1,983**	**Total Long-term Disturbance**		**10,583**	**1,621**

Source: BLM 2013

REASONABLY FORESEEABLE DEVELOPMENT SCENARIO FOR THE PROPOSED CARTER MLP AREA

Projections for the proposed Carter MLP RFD were extracted from the MCFO RFD baseline projected well numbers described above. However, as the location of the MLP area is many miles from CBNG development potential areas in the MCFO, no CBNG wells are projected to be developed in the MLP area.

The proposed MLP area is located in Carter County and lies within the MCFO RFD area (Table 27). The MLP area has approximately 57,545 acres in high development potential, approximately 140,343 acres in medium development potential, and approximately 198,770 acres in low development potential. The area contains approximately 396,658 surface (all ownership) acres, or which 283,162 acres are federal oil and gas mineral acres. The proposed MLP is proposed as part of Alternative C (see Table 2-5); therefore, an RFD was projected only for Alternative C using the MLP baseline scenario.

TABLE 27. PROJECTED BASELINE OF NEW WELLS TO BE DRILLED IN THE CARTER MLP BY DEVELOPMENT POTENTIAL 2011 - 2030

Development Potential	Oil Wells		Conventional Gas Wells		Total New Wells To Be Drilled	
	Total	Federal	Total	Federal	Total	Federal
High	16	10	13	8	29	18
Medium	23	19	19	15	42	34
Low	10	7	8	6	18	13
Totals	**49**	**36**	**40**	**29**	**89**	**65**

Source: BLM 2013

The RFD projects up to 89 total wells (40 gas wells and 49 oil wells) to be drilled within the MLP. Of these wells, 65 (29 gas wells and 36 oil wells) would be BLM-administered wells drilled (Table 28). Of the 65 BLM-administered wells drilled, 51 would be producing wells (23 gas wells and 28 oil wells) (Tables 29 and 30).

The number of wells projected for Alternative C was calculated using the same methods applied above (Table 31 to Table 34). Acres of disturbance were calculated using the same acres and methods as described above for short-term and long-term disturbance.

TABLE 28.
DEVELOPMENT POTENTIAL ACRES WITHIN THE CARTER MLP

Development Potential	MLP Area Acres and Percentage of Total	BLM-administered Surface Acres	BLM-administered Mineral Acres
High	57,545 (14%)	8,509	35,556
Medium	140,343 (35%)	59,051	112,264
Low	198,770 (51%)	71,349	135,342
TOTAL	**396,658**	**138,909**	**283,162**

Source: BLM 2013

TABLE 29. DISTURBANCE ASSOCIATED WITH NEW DRILLED WELLS, EXISTING WELLS, AND PROJECTED ACTIVE WELLS FOR THE BASELINE SCENARIO IN THE CARTER MLP (SHORT-TERM DISTURBANCE) 2011 - 2030

Type	Wells		Acres of Surface Disturbance			
	Total	BLM-administered	Road/Utility Corridor	Well Pad	Total	BLM-administered
New Exploratory Gas Wells	40	29	0.55	0.50	42	30
New Exploratory Oil Wells	49	36	1.20	3.00	206	151
Total New Exploratory Wells	**89**	**65**			**246**	**181**
Existing Active Gas Wells	1	0	0.22	0.25	0.50	0
Existing Active Oil Wells	0	0	0.48	1.00	0	0
Total Existing Wells	**1**	**0**			**0.50**	**0**
Total Active Wells	**90**	**65**	**Total Short-term Disturbance**		**42.50**	**181**

Source: BLM 2013

TABLE 30. DISTURBANCE ASSOCIATED WITH NEW PRODUCING WELLS FOR THE BASELINE SCENARIO IN THE CARTER MLP (LONG-TERM DISTURBANCE) 2011 - 2030

Type	Wells		Acres of Surface Disturbance			
	Total	BLM-administered	Road/Utility Corridor	Well Pad	Total	BLM-administered
New Producing Gas Wells	32	23	0.22	0.25	15	11
New Producing Oil Wells	38	28	0.48	1.00	56	41
Total New Producing Wells	**70**	**51**			**71**	**52**
Existing Gas Wells	1	0	0.22	0.25	0.50	0
Existing Oil Wells	0	0	0.48	1.00	0	0
Total Existing Wells	**1**	**0**			**0.50**	**0**
Total Active Wells	**71**	**51**	**Total Long-term Disturbance**		**71.50**	**52**

Source: BLM 2013

ALTERNATIVE C

TABLE 31. ALTERNATIVE C CARTER MLP RESTRICTIONS BY DEVELOPMENT POTENTIAL (ACRES)

Restriction	*High*	*Medium*	*Low*	*Total Acres*
Closed	0	0	0	0
NSO	0	130	1,915	2,045
CSU	35,556	112,264	135,342	283,162
Timing	0	0	0	0
Lease Terms	0	0	0	0

Source: BLM 2013

TABLE 32. ALTERNATIVE C CARTER MLP PROJECTED NUMBER OF WELLS TO BE DRILLED 2011 - 2030

	Oil Wells		Gas Wells		Total Wells Drilled		Total Wells Not Drilled
	Total	**Federal**	**Total**	**Federal**	**Total**	**Federal**	**Federal**
High	16	10	13	8	29	18	0
Medium	23	19	19	15	42	34	0
Low	10	7	8	6	18	13	0
Totals	**49**	**36**	**40**	**29**	**89**	**65**	**0**

Source: BLM 2013

TABLE 33.
DISTURBANCE ASSOCIATED WITH NEW DRILLED WELLS, EXISTING WELLS, AND PROJECTED ACTIVE WELLS FOR ALTERNATIVE C SCENARIO IN THE CARTER MLP (SHORT-TERM DISTURBANCE) 2011 - 2030

Type	Wells		Acres of Surface Disturbance			
	Total	**BLM-administered**	**Road/Utility Corridor**	**Well Pad**	**Total**	**BLM-administered**
New Exploratory Gas Wells	40	29	0.55	0.50	42	30
New Exploratory Oil Wells	49	36	1.20	3.00	206	151
Total New Exploratory Wells	**89**	**65**			**246**	**181**
Existing Active Gas Wells	1	0	0.22	0.25	0.50	0
Existing Active Oil Wells	0	0	0.48	1.00	0	0
Total Existing Wells	**1**	**0**			**0.50**	**0**
Total Active Wells	**90**	**65**	**Total Short-term Disturbance**		**246.50**	**181**

Source: BLM 2013

TABLE 34.
DISTURBANCE ASSOCIATED WITH NEW PRODUCING WELLS FOR ALTERNATIVE C SCENARIO IN THE CARTER MLP (LONG-TERM DISTURBANCE) 2011 - 2030

Type	Wells		Acres of Surface Disturbance			
	Total	**BLM-administered**	**Road/Utility Corridor**	**Well Pad**	**Total**	**BLM-administered**
New Producing Gas Wells	32	23	0.22	0.25	15	11
New Producing Oil Wells	38	28	0.48	1.00	56	41
Total New Producing Wells	**70**	**51**			**71**	**52**
Existing Gas Wells	1	0	0.22	0.25	0.50	0
Existing Oil Wells	0	0	0.48	1.00	0	0
Total Existing Wells	**1**	**0**			**0.50**	**0**
Total Active Wells	**71**	**51**	**Total Long-term Disturbance**		**71.50**	**52**

Source: BLM 2013

SOLID MINERALS

COAL

BIG DRY RMP AREA

<The following is from the Big Dry RMP (BLM 1996) and pertains to the coal decisions that would be carried forward for the Big Dry RMP area in this RMP.>

Introduction

This summary is intended to aid in understanding the federal coal management process as it applies to the planning area. The basic requirements of coal management are detailed under the guidance in 43 CFR 3400.

The objectives in managing the federal coal resource in this area are (1) to provide for the development of Federal coal in an orderly and timely manner, consistent with the federal coal management program and policies, environmental integrity, and national energy needs; and (2) to identify federal coal that is acceptable for further consideration for leasing. This resource management plan and environmental impact statement provides the basis for tract specific analysis of areas considered for new competitive federal coal leasing, lease modification, exchange, and license issuance.

Coal Planning Process

The planning area is within the Fort Union Coal Region and competitive leasing is subject to oversight by the Regional Coal Team. At this time the region is decertified and not subject to regional coal sales. Individual leases can be sold without a region-wide analysis. However, tract specific analyses are required and the coal team can review the sale and determine that there is enough cumulative regional interest to justify recertifying the coal region. If this decision is made, consideration of the lease sale will become part of a regional analysis.

There are four basic types of coal management actions that can be taken in the planning area: lease by application, lease modification, exchange, and license issuance. Since there is no indication of an immediate request for any of these actions, coal activity is not a major issue in this plan. Coal in the Big Dry Resource Area has low potential for underground mining. Therefore, coal planning is based on surface mining only.

In each of the procedures there is a point at which an environmental impact statement or environmental assessment is prepared. The decision as to what level of study is appropriate hinges on the sensitivity and perceived impact of the action. The environmental study conducted for coal actions will include passing the tract through the four screens identified in 43 CFR 3420.1-4. The screens are: identification of areas with coal development potential, the application of unsuitability criteria identified in 43 CFR 3461.1 (which are primarily on-site concerns), multiple land use decisions, and landowner consultation.

The off-site impacts of coal development will be addressed as needed when identified in the scoping process for specific lease activity planning. This includes concerns about impacts on the agricultural community, area socioeconomics, air quality, and regional transportation.

Identification of Coal Development Potential

The first step in making coal development potential determinations is the gathering of all available geologic data for the study area. The primary data sources are published and unpublished drill hole reports. This includes drilling by the U.S. Geological Survey, the BLM, the Montana Bureau of Mines and Geology, the Bureau of Reclamation, and several coal companies. The government data is available in published reports and publicly accessible files held by the various agencies. The company data is mainly confidential and comes from exploration licenses, mine plan files, and drilling on privately owned coal. The drilling by federal agencies is on federally held coal.

There are several publications on the coal geology of eastern Montana. These provide coal outcrop maps, coal elevations and thicknesses, and identify many areas where coal has been burned in-place. Much information is found in the records of old mines and company interest areas. This often includes coal thicknesses, depths, and quality analyses. Once the coal data has been assembled, the coal beds shown in the drilling records and maps are identified and correlated. Then coal thickness (isopach) and overburden thickness maps are prepared for each coal bed of interest.

The final step preparatory to identifying coal development potential is the comparison of the overburden maps to the coal isopach maps. This results in a stripping ratio (feet of overburden to feet of coal) map. The stripping ratio is the chief parameter in the identification of the development potential of any parcel of land. The classification of development potential falls into four categories:

High - coal at least 5 feet thick, overburden no greater than 150 feet thick, and stripping ratio no more than 10:1.
Moderate - coal at least 5 feet thick, overburden no greater than 200 feet thick, and stripping ratio no more than 20:1.
Low - coal present but does not meet the criteria for high or moderate development potential.
None - no coal present.
It should be noted that a major factor in development potential categorization is the availability of data. As further data becomes available the ranking of any given area can change, usually upwards. This is especially true of areas ranked as having low potential as they might be better classified as "unknown."

The potential for a section is the highest rank of any portion of that section. If any part of the section has high potential, the entire section is ranked high. This is done because a section is the smallest practical unit for classification and study at a scale suitable for the whole planning area. If specific activity planning is done in an area, more detailed investigation will be done at that time.

Fort Union Region coal is ranked as lignite. The lignite heating value ranges from 5,000 to 7,500 British thermal units per pound. Eastern Montana coal typically has high moisture, and low ash and sulfur content (see Table 55).

The coal resources identified in the planning area shown in coal development potential maps total 19.276 billion tons (of which 47.5 percent or 9.164 billion tons is federal) (Table 56). The coal bearing Fort Union formation covers the eastern two-thirds of the planning area. There are doubtless many areas of high and moderate potential coal which have not been identified to date. There are also areas which have been identified but are considered insignificant or inadequately understood and were left out of this study. The acquisition of new data will make for refinements in this estimate.

The remaining three screening steps are applied to the coal areas identified through this first screen.

TABLE 55. COAL BED DATA IDENTIFIED HIGH AND MODERATE COAL AREAS

Name	Average Thickness (feet)	Moisture Percent	Ash Percent	Volatile Matter Percent	Fixed Carbon Percent	Sulfur Percent	Btu/lb
CREEK							
Pust	23.9	38.61	8.02	26.52	26.81	0.72	6,182
CIRCLE							
Pust	15.0	38.61	8.02	26.52	26.81	0.72	6,182
P	6.0	NA	NA	NA	NA	NA	
Rogers	10.0	NA	6.10	NA	NA	0.40	7,410
R	5.0	NA	NA	NA	NA	NA	NA
Haugins	7.0	33.10	5.30	26.55	35.05	0.45	7,455
S	12.0	26.50	7.50	26.50	34.90	0.27	7,223
CUSTER CREEK							
R	6.8	NA	NA	NA	NA	NA	NA
U	20.3	25.60	18.80	25.60	30.00	0.30	6,430

Name	Average Thickness (feet)	Moisture Percent	Ash Percent	Volatile Matter Percent	Fixed Carbon Percent	Sulfur Percent	Btu/lb
L	7.0	NA	NA	NA	NA	NA	NA
GIRARD							
Prittegurl	7.5	39.85	7.10	25.65	27.40	0.75	6,470
Breugger	5.0	43.20	5.80	29.00	24.00	0.30	5,999
Elvirio	14.0	38.40	6.73	25.67	29.20	0.70	6,667
D	6.7	34.90	7.60	27.10	30.40	0.50	6,790
KNOWLTON							
Upper Dominy	28.0	38.80	5.72	24.64	30.78	0.39	6,663
Middle Dominy	8.5	37.67	5.60	26.07	30.67	0.43	6,788
Lower Dominy	9.0	36.20	7.72	25.85	30.23	0.41	6,645
LAME JONES CREEK							
A	6.0	NA	NA	NA	NA	NA	NA
Lame Jones	7.5	38.40	10.46	25.98	25.60	0.61	6,235
PENNEL CREEK							
A	11.5	32.40	8.90	28.10	30.10	0.51	6,819
B	11.0	NA	NA	NA	NA	NA	NA
SCOBEY							
E	3.0	NA	NA	NA	NA	NA	NA
D	8.0	29.83	13.67	27.25	29.26	0.64	6,418
C	3.0	NA	NA	NA	NA	NA	NA
WEST GLENDIVE							
Kolberg Ranch	8.0	NA	NA	NA	NA	NA	NA
Peuse	112.0	35.68	7.44	26.86	29.87	0.32	6,723
Poverty Flats	8.0	NA	NA	NA	NA	NA	NA
Newton Ranch	9.5	30.90	13.45	24.76	30.89	0.37	6,507
WIBAUX-BEACH							
Harmon	15.0	38.71	9.13	25.30	26.86	0.88	6,079
Hansen	9.0	36.43	11.40	25.00	27.17	1.60	6,077

KEY: Btu/lb. = British thermal unit per pound
NA = not applicable

TABLE 56. HIGH AND MODERATE DEVELOPMENT POTENTIAL TONS AND ACRES FOR IDENTIFIED COAL AREAS

Coal Area	Total Tons Recoverable (x1,000,000)	Total Acres	Federal Tons Recoverable (x1,000,000)	Federal Acres
Burns Creek	5,813	267,500	2,595	118,828
Circle	6,238	599,500	2,589	253,617
Custer Creek	459	30,000	342	27,191
Girard	1,534	235,500	1,342	201,924
Knowlton	661	34,000	280	14,176
Lame Jones Creek	299	34,500	120	12,685
Pennel Creek	474	52,000	243	25,923
Scobey	911	132,000	526	74,035
West Glendive	1,903	243,000	799	102,477
Wibaux-Beach	982	46,000	328	16,524
TOTAL	19,276	1,674,500	9,164	847,379

NOTE: Tonnage estimates prepared by BLM.

Application of Coal Unsuitability Criteria

A total of 263,608 federal coal acres were found unacceptable for further consideration for coal leasing through application of the coal unsuitability screen. This screening is preliminary and will be reviewed and completed when a specific coal tract proposal is made. Those applications that can be made for the unsuitability criteria as follows:

Criterion 1 - Federal Land System: Lands totaling 22,852 federal coal acres were identified as unsuitable as part of the Lewis and Clark National Historic Trail system.

Criterion 2 - Federal Lands within Rights-of-way or Easements, or Surface Leases for Residential, Commercial, Industrial, or Other Public Purposes: No lands were found unsuitable under this criterion. This criterion will be applied if specific coal activity proposals are made.

Criterion 3 - Buffer Zones along Road Rights-of-way and Adjacent to Communities, Public Schools, Occupied Dwellings, Churches, Public Parks, and Cemeteries: No lands were found unsuitable under this criterion. This criterion will be applied if specific coal activity proposals are made.

Criterion 4 - Wilderness Study Areas: The Terry Badlands Wilderness Study Area includes 15,630 acres within the Custer Creek coal area. Consequently, 14,166 federal coal acres were found unsuitable for further consideration.

Criterion 5 - Scenic Areas: The Terry Badlands Wilderness Study Area is a Class I visual resource management area. Under this criterion, the same acreage as that identified under Criterion 4 (14,166 federal coal acres) was found unsuitable.

Criterion 6 - Land Used for Scientific Study: There are no federal lands within the coal areas used for scientific study.

Criterion 7 - Historic Lands and Sites: There are no lands within the coal areas that are on the National Register of Historic Places. There are 2,524 federal coal acres overlain by sites considered eligible but not submitted to the register. These coal lands have been declared unsuitable under this criterion.

Criterion 8 - Natural Areas: There are no designated natural areas or national natural landmarks within the coal areas.

Criterion 9 - Federally Designated Critical Habitat for Threatened and Endangered Species: Under Alternative A, there is no identified area for this criterion. Under Alternatives B and C, 853 acres in the Black-footed Ferret Area of Critical Environmental Concern would overlap the Custer Creek coal area and would be designated unsuitable. Under Alternative D, 3,840 acres in the Black-footed Ferret Area of Critical Environmental Concern would overlap the Custer Creek coal area and would be designated unsuitable under this criterion. The 16 acre piping plover site is also designated unsuitable.

Criterion 10 - State Listed Threatened and Endangered Species: No areas were listed as unsuitable under this criterion.

Criterion 11 - Bald and Golden Eagle Sites: Four eagle nest sites were identified in the coal areas resulting in 2,040 acres declared unsuitable under this criterion.

Criterion 12 - Bald and Golden Eagle Roost and Concentration Areas: Eagle roosting and concentration areas were identified along the Missouri and Yellowstone rivers in the Girard and Custer Creek coal areas, resulting in 5,503 federal coal acres declared unsuitable under this criterion.

Criterion 13 - Falcon Nesting Sites: Prairie falcon sites were identified in the Burns Creek and Circle coal areas. A total of 4,080 federal coal acres were designated unsuitable under this criterion.

Criterion 14 - Migratory Birds of High Federal Interest: No additional migratory birds of high federal interest (besides eagles) were identified in the coal areas.

Criterion 15 - Habitat for Species of State Interest: A total of 213,098 federal coal acres are unsuitable under this criterion. The habitat consists of critical winter ranges for white-tailed and mule deer, antelope, and grouse leks.

Criterion 16 - 100 Year Floodplains: A total of 6,300 federal coal acres were found within the Burns Creek, Custer Creek, and Girard coal areas and designated unsuitable.

Criterion 17 - Municipal Watersheds: No areas were identified as unsuitable under this criterion. There have been no municipal watersheds designated by the surface management agency within the coal areas.

Criterion 18 - Natural Resource Waters: No areas were identified as unsuitable under this criterion. There are no natural resource waters designated within the coal areas.

Criterion 19 - Alluvial Valley Floors: No areas were identified as unsuitable under this criterion. The State of Montana has the lead in designation of alluvial valley floors. It will make the designation when there is a specific coal action proposal including a mine plan.

Criterion 20 - State Proposed Criteria: The State of Montana has proposed no unsuitability criteria.

Multiple Land-Use Decisions

There are no unsuitability conflicts that necessitate multiple use or mitigative measures.

Coal mining and oil and gas production can conflict. Present management practice is to allow the companies involved the opportunity to negotiate a private settlement. BLM policy is being drafted for the situation when the coal and oil and gas lease are federal. The proposal is to work on a first-come, first-served basis. The second lease issued will include the stipulation that the lessee must be prepared to hold operations in abeyance or cease permanently in favor of the prior lease.

Surface Owner Consultation

BLM is required by Section 714 of the Surface Mining Control and Reclamation Act to consult with "qualified" surface owners of split estate lands (privately owned surface over federally held coal) where surface mining of the federal coal is under consideration.
"Qualified" surface owners are asked to state their opinion for or against coal mining on their land. In areas of significant surface owner opposition, federal coal is removed from consideration for surface mine leasing. This screen involves only split estate lands remaining after the other three screens have been applied.

Surface owner consultation has not been conducted for this resource management plan and environmental impact statement. At present there are no active proposals for new coal leasing in the planning area. Since landownership and owner qualifications will change through time, this screen will be applied when actual lease proposals are contemplated. This is in order to respond to the current landowner feelings at the moment of lease activity planning.

Coal Development Scenario Generic Mine and End-use Facility Description and Impacts

The purpose of this discussion is to present assumptions and impacts for coal development. The uncertainty of the location and size of the mine and end-use facility will limit this to a general discussion. This is not meant to be a substitute for a detailed site-specific analysis and environmental impact statement that may come later in response to an application for the permit to build and operate a mine and end-use facility. Nor will it preclude any federal, state, local, or private decisions concerning actual end-use, facility siting, or end-use restrictions.

The following is based on the detailed analysis presented in the Draft Fort Union Regional Coal Draft Environmental Impact Statement (USDI, BLM 1982c) and related logical mine size tract site-specific analyses and the Draft North Dakota Resource Management Plan and Environmental Impact Statement (USDI, BLM 1986a).

Mine

The generic mine considered is a 5.5 million ton per year surface mine with a 40-year mine life. Mine operation is expected to disturb land at a rate of 340 acres per year or 14,000 acres over 40 years. It would take approximately 10 to 13 years for completion of the full cycle from initial disturbance through mining, reclamation, and bond release for each acre. In full production, the total area out of production in any year would be 3,400 to 4,400 acres. Soils would be continuously replaced on mined-out areas and brought back into production during the life of the mine.

The low energy value and high water content of lignite coal constrains transportation of lignite. Therefore, it is assumed that an end-use facility would be near the mine.

Facility

A generic coal-fired electric power generation plant would consist of two 500 megawatt units located near a lignite coal source. The facility has an average operation factor of 0.90 and a load factor of 0.85. It would be capable of delivering a maximum of approximately 900 megawatts to the existing transmission system. The facility would consist of the following units: (l) coal preparation, storage, and handling; (2) power generation; (3) pollution control and waste disposal; and (4) utility and transportation corridors. The total land area dedicated to the facility would be approximately 600 acres.

Coal Preparation, Storage, and Handling

Lignite coal would be transported from a nearby mine to a 3-day storage pile or a 60-day storage pile. From the 3-day storage pile, the coal would be sent by conveyor to be crushed before being transferred to the plant silos for intermediate storage. Finally, coal would be reconditioned before introduced into the furnace for ignition. A generic plant would burn approximately 800 tons of coal per hour or about 5.5 million tons per year.

Power Generation

The crushed coal is combined with air supplied by forced-draft fans and then ignited and burned in the boiler furnaces. The combustion in the boiler furnace produces heat that creates steam from feed water entering the boiler heat-exchange system. After releasing energy through expansion in the high-pressure section of the turbine, steam is returned to the boiler for reheating. After being reheated, steam is returned to the intermediate section and subsequently to the low-pressure section of the turbine. Spent steam passes through the condenser where waste heat is removed, and the condensed liquid is returned to the boiler feed water system. Combustion gases from the furnace are exhausted to the atmosphere through the pollution control devices. Steam energy is converted to mechanical energy by the turbine and subsequently transformed into electrical energy by the generator. Generated power is routed through the main transformer for voltage step-up and then to a switchyard and transmission line system for distribution.

The water for the power plant systems would come from a nearby river or impounded water source. Demineralization of the filtered water for boiler makeup will be necessary to provide water of the required quality for the steam generation system. The treated water would then be stored for use. There will be several holding ponds included at the facility to store recoverable water.

The cooling system for the electric power facility would be mechanically induced draft wet-type cooling towers. Cooling tower blowdown would be sent to a holding pond to be used for ash sluicing, scrubbers or coal dust suppression.

Pollution Control and Waste Disposal

Burning lignite in the boiler produces gaseous emissions, fly ash, and bottom ash. The gas from the boiler passes through a fabric filter baghouse and a sulphur dioxide dry scrubber, and is dispersed by a 600-foot stack.

Bottom ash from the main boiler, pyrite rejected from the pulverizer, and ash discharged from the hoppers would be hydraulically conveyed to dewatering bins. The ash would then be loaded into trucks and transported to the adjacent mine for disposal.

The plant would include a dry scrubbing system to absorb sulphur dioxide from the flue gas. The scrubber product would be treated prior to disposal with dry fly ash. The flyash and scrubber product would be blended with water for dust control and stabilization. Emission of nitrogen oxides would be controlled by designing the boiler for proper mixing and flame quenching. The quantity of wastes produced by the power facility would be approximately 80 tons per hour of fly-ash and scrubber product and 10 tons per hour of bottom ash.

The air emissions would depend primarily on: (l) the conversion process, the emission control technology used at the facility, and the level of control used; (2) the sulfur, ash, and water content of the lignite; and (3) whether or not the facility produces its own electric power. For this discussion, it is assumed that the facility would produce electric power with coal-fired boilers and steam turbines.

Utility and Transportation Corridors

Water would be pumped from the water source to a surge pond. The water pipelines would require a rights-of-way probably consisting of a 100-foot-wide construction easement and a 50-foot-wide permanent easement. The surge pond would have a water surface area of approximately 42 acres and would contain 1,050 acre-feet of water. Transportation corridors would be required for roads and a railspur. The transmission line leaving an electric power facility would be a 500 kilovolt line with a ROW 150 feet wide connecting with an existing system.

<End of Big Dry RMP>

POWDER RIVER RMP AREA

<The following is from the Powder River RMP, Appendix D Federal Coal Lands Review Process (BLM 1985c) and pertains to the coal decisions that would be carried forward for the Powder River RMP area in this RMP.>

Call for Coal Resource Information

Calls for expression of interest were sent to 34 companies on July 13, 1981. There were seven replies.

Identification of Coal with Development Potential

The resource Evaluation Branch of the Minerals Management Service, Billings, Montana (now the BLM Branch of Solid Minerals, MSO, BLM) evaluated the Powder River Resource Area to determine areas with coal development potential.

Criteria for the determination are:

- Maximum 15:1 stripping ratio
- Maximum 500 feet overburden
- Coal at least 5 feet thick.

If an area met all three criteria it was classified as having development potential. These parameters were used for coal with over 7,000 BTU per pound. Most of the coal in the resource area is in this category. But coal in the

Pine Hills area east of Miles City has lower heating values. For the purposes of this RMP, however, all coal was delineated based on the above parameters, because of the small acreage of coal below 7,000 BTU per pound. These criteria result in a greater tonnage of coal over a given area than the currently recognized maximum economic stripping limits used by surface miners in the region (generally limited to 6.5:1 maximum stripping ratio, 200 feet maximum overburden, and coal for purposes of the RMP screening analysis the beds greater than 20 feet thick).

For purposes of the RMP screening analysis the legal subdivision (required for possible leasing) was used to describe the acreage rather than the free-flowing, and somewhat smaller, actual boundary of the coal resources. Tonnage figures used in the RMP were based on the actual acreage X thickness of coal X 1770 tons per acre foot and denote the actual tonnage of coal with development potential within the legal subdivision.

Application of Unsuitability Criteria

The unsuitability criteria in 43 CFR 3461 provide that coal lands shall be considered unsuitable for all or certain stipulated methods of coal mining if they fall within any of 20 categories listed in this Appendix.

In conformance with this requirement, all 1,123,600 acres of federal coal with development potential in new planning were assessed to see what unsuitability criteria applied. As a result, 61,615 acres containing 4.8 billion tons of coal were found unsuitable without exception for coal leasing, as shown in Table 2-7 of the main text. An additional 39,713 acres, as shown in Table 2-8, were identified as containing unsuitability criteria where an exception has been made or may be applied in the future, and carried forward for further leases or exchange consideration with stipulations. Also identified were 856 stream miles of preliminarily identified alluvial valley floors on both federal and private minerals. Because wildlife inventories were incomplete over much of the coal region, 522,500 acres in alternative B and 589,200 acres in Alternative C were identified as acceptable for further lease or exchange consideration pending further wildlife studies.

Methods

From January to March 1983, the Resource Area staff identified locations where unsuitability criteria applied within the areas of coal with development potential. Overlays showing application of the individual criteria were compiled at 1:100,000 scale for six quadrangles covering the coal area (Birney, Broadus, Lame Deer, Powderville, Miles City, and Forsyth). Composite overlays were constructed showing application of the unsuitability criteria, and areas needing further study. These overlays are available for inspection at the Miles City District Office. Unsuitability determinations were made by legal subdivision. The minimum acreage deleted was a quarter of a quarter section (40 acres) or an individual lot. Only in the case of floodplains was acreage deleted on other than a legal subdivision and discussed by criterion and county in the coal Management Situation Analysis on file at the Miles City District Office.

Results

The following is a summary of results obtained for each criterion. In general, Criteria 1, 2, 3, and 6 refer to land status; Criteria 4, 5, and 8 refer to recreational and natural values; Criterion 7 refers to cultural resources; Criteria 9 through 15 refer to wildlife; Criteria 16 through 19 refer to watershed; and Criterion 20 refers to issues proposed by the State.

Lands

Criterion 1-Federal Land Systems

Two tracts totaling 331 acres were identified as unsuitable without exception. Both are withdrawn by the United State Forest Service for administrative purposes.

Criterion 2-Rights-of-Way Easements

A 100-foot wide ROW along roads on federal surface was identified as unsuitable. Such rights-of-way totaled 257 acres. An exception could be applied at a future date if all parties involved agreed to a relocation plan.

Criterion 3-Buffer Zones along Road Rights-of-Way and Adjacent to Communities, Public Schools, Occupied Dwellings, Churches, Public Parks, and Cemeteries

One public park-Woodruff Park in the Pine Hills east of Miles City-containing 76 acres, one cemetery containing one are, and five schools and buffer zones containing 35 acres, were identified as unsuitable for mining without exception.

Road rights-of-way (100 feet) plus a buffer of 100 feet outside each side of the ROW (a total of 300 feet) are unsuitable for mining. A total of 12,837 acres of road rights-of-way and buffers were identified. Land under occupied dwellings and within a 300-foot buffer is unsuitable for mining. A total of 1,489 acres of dwellings and buffers were identified. An exception could be applied to dwellings and rights-of-way in the future if all parties involved agree to a relocation plan.

Criterion 6-Land Used for Scientific Study

No areas were identified as unsuitable under this criterion.

Recreational and Natural Values

Criterion 4-Wilderness Study Areas

Two Wilderness Study Areas (WSAs) were found unsuitable without exception. A total of 8,438 acres covering the entire Zook Creek WSA were deleted from further lease consideration. This acreage is slightly larger than the actual acreage of the WSA, because deletions were made on legal subdivisions. A total of 5,933 acres were deleted for Buffalo Creek WSA. This acreage differs slightly from actual WSA acreage because of legal subdivisions and also because a small part of the WSA lies outside the high and moderate coal area. If the WSAs were dropped from Wilderness consideration, the areas could be screened further for leasing consideration.

Criterion 5-Scenic Areas

Because WSAs are designated Class 1 scenic areas in Visual Resource Management, the 8,438 acres in Zook Creek and 5,933 acres in Buffalo Creek have also been deleted as unsuitable without exception under Criterion 5 as well as 4.

Criterion 8-Natural Areas

No areas were identified as unsuitable under this criterion.

Cultural Resources

Criterion 7-Historic Lands and Sites

Reynolds Battlefield in Powder River County, containing 1,404 acres, and Rosebud Battlefield in Big Horn County containing 5,051 acres, have been identified as unsuitable without exception. These areas would lose nearly all value if the original surface were modified.

An additional 6,776 acres, containing known significant historic and prehistoric sites eligible for or on the NRHP, were identified as unsuitable. However, if the Advisory Council on Historic Preservation and the State Historic Preservation Officer determine that the action will have no significant adverse effect on the properties,

an exception may be applied. Pending such determinations, the exceptions have been applied to the eligible sites and submitted to the review agencies for comment.

Criterion 7 was revised on January 6, 1984 and was reapplied which resulted in no changes.

Wildlife

Recommendations for Criteria 9 through 15 were developed in cooperation with personnel from the Montana Fish, Wildlife and Parks and the United States Fish and Wildlife Service. References to source material used to develop overlays are listed in the MSA for coal.

Wildlife-related unsuitability criteria were only applied on the acreage where inventory was complete. Known sites in areas with incomplete wildlife inventory were identified on the overlays but not tallied in the acreage tabulations. Areas lacking inventory have been identified as acceptable for further lease consideration pending further study. A reasonable timetable for conducting remaining wildlife studies in the areas pending further study is listed in the coal MSA.

All buffer zones were established using legal subdivisions encompassing recognizable appropriate land forms on quad maps.

Data used were those available as of February 18, 1983. Wildlife survey data does become outdated. For any proposed coal tract, a wide variety of updated information may be required for a particular activity plan.

Criterion 9-Federally Listed Endangered Species

No areas were identified as unsuitable under this criterion.

Criterion 10-State Listed Endangered Species

No areas were identified as unsuitable under this criterion.

Criterion 11-Bald and Golden Eagle Nest Sites

Seventeen golden eagle nests and buffer zones, totaling 6,840 acres, were the only unsuitable habitat found. No exception was applied under this criterion.

Criterion 12-Bald and Golden Eagle Roost and Concentration Areas

Bald eagle winter concentration areas along the Tongue River, totaling 2,020, acres, were the only unsuitable habitat found. No exception was applied under this criterion.

Criterion 13-Falcon Cliff Nesting Sites

Fourteen prairie falcon nests and appropriate buffer zones, totaling 4,540 acres, were the only unsuitable habitat found. No exception was applied under this criterion.

Criterion 14-Migratory Birds of High Federal Interest

No areas were identified as unsuitable under this criterion.

Criterion 15-State Resident Fish and Wildlife

A variety of habitat associated with seven wildlife species were identified as unsuitable. On some of the Criterion 15 acreage “a lease may be issued if, after consultation with the State, the surface management agency determines that all or certain stipulated methods of coal mining will not have a significant long-term impact on the species being protected” (43 CFR 3461.[o][1]). These mitigatable acreages consist mainly of sharp-tailed

grouse and sage-grouse leks with buffer zones, and sage –grouse wintering areas. Habitat recovery and replacement plan requirements are detailed in the coal MSA. Most of the critical mule deer, white-tailed deer, antelope, and bighorn sheep winter range as well as critical turkey wintering areas were identified as unsuitable without exceptions. One area of overlapping mule deer and antelope winter range consisting of 1062 acres north of Decker was identified as suitable for lease consideration with stipulations in order to avoid a bypass situation.

Wildlife acreage identified as unsuitable without exception includes:

- 22,141 acres of mule deer winter range;
- 7,689 acres of antelope winter range;
- 3,720 acres of overlapping mule deer and antelope winter range;
- 960 acres of white-tailed deer winter range;
- 3,374 acres of turkey wintering areas; and
- 318 acres of bighorn sheep winter range.
- 35,482 total acres unsuitable without exception*

Wildlife acreage identified as unsuitable with exceptions includes:

- 5,421 acres within 16 sage-grouse leks and buffer zones;
- 21,594 acres within 96 sharp-tailed grouse leks and buffer zones; and
- 4,081 acres of sage-grouse winter habitat.
- 27,086 total acres unsuitable with exceptions.*

*Totals are slightly smaller than the sum of the various categories due to overlap among habitat of different species.

Watershed

Criterion 16-Floodplains

Floodplains defined as unsuitable without exception contain 3,215 acres along the Tongue River and 2,966 acres along the Powder River. There are large developed acreages along these two rivers. Criterion 16 requires that mining on floodplains could not take place if there would be substantial threat of loss of life or property. Floodplains of lesser streams were not deleted because mining was not identified as posing a substantial threat of loss of life or property.

Criterion 17-Municipal Watersheds

No areas were identified as unsuitable under this criterion.

Criterion 18-Natural Resource Waters

No areas were identified as unsuitable under this criterion.

Criterion 19-Alluvial Valley Floors (AVFs)

No acreage was deleted at this time due to alluvial valley floors. However, 856 stream miles within the coal with development potential area were identified as preliminarily alluvial valley floors based on color infrared air photo interpretation by BLM staff and comparison with 1:100,000 scale reconnaissance maps of AVFs in the northern Powder River Basin, prepared by Earth Resource Associated in 1983 for the Office of Surface Mining. The miles identified were over private as well as federal coal. Final determination and deletion of alluvial valley floors would be made at the mine planning stage.

State Concerns

Criterion 20-State Proposed Criteria

No areas were identified as unsuitable under this criterion.

Surface Owner Consultation Process

According to Public Law 95-87, the 1977 Surface Mining Control and Reclamation Act (SMCRA), all comprehensive land use plans involving potential coal leasing shall consult with qualified private surface owners over federal coal with development potential, and ask the surface owner to state his/her preference for or against the offering of the deposit under his/her land for lease. In conformance with this requirement, letters were sent out on January 19-21, 1983, to all 454 private surface owners over the 943,000 acres of coal with development potential in the Resource Area not considered in previous planning. (See the end of this Appendix.) The new planning areas contain an additional 183,000 acres of public surface over public minerals. Surface owners were requested to respond within 30 days; however, late responses were accepted for planning purposes until March 4, 1983. The letter did not ask for surface owner consent; rather, it requested views to help BLM decide which coal lands in the Powder River Basin should and should not be considered further for possible leasing. Areas with significant negative surface owner views were dropped from further consideration for leasing in this RMP; all other areas were carried forward as acceptable for further consideration. The decision on which specific coal lands will be leased will be made in a separate process, called activity planning, which is beyond the scope of the RMP.

Surface Owner Response Analysis

Of the 454 letters sent out, 246 were returned, for a 54 percent response rate. The responses covered 569,000 acres, or 60 percent of the total 943,000 acres included in the mailing. Tables D-1 and D-2 show number and acreage of responses by county.

The figures in the tables show that the response was greatest in Big Horn County, where 80 percent of the landowners responded. Response was lowest (below 50 percent) in Powder River and Treasure counties. In general, landowners closer to existing mining operations or proposed developments (concentrated in Big Horn and Rosebud counties) were more responsive than those far away from coal activity. Large landowners were slightly more responsive than small landowners. (The 54 percent response rate covered 60% of the acreage.)

In the letter, owners were asked to show themselves as: 1) in favor of, 2) against, or 3) undecided about leasing of Federal coal underneath their surface. They were also asked to state: 4) if their surface was already under lease by a coal company and 5) whether they met the requirements as a qualified surface owner under SMCRA. The number and acreage of responses, by county, in these five categories are listed in Tables D-3 and D-4.

TABLE D-1.
CONSULTATION SUMMARY AND NUMBER OF RESPONSES

County	Total Letters Sent	Total Response Received	Response/Total = %
Big Horn	90	72	80
Rosebud	84	43	51.2
Powder River	223	103	46.2
Custer	51	26	51
Treasure	6	2	33.3
Total	454	246	54.2

TABLE D-2.
ACREAGE REPRESENTED BY RESPONSE

County	Letters Sent (Acres)	Response Received (Acres)	Response / Total = %
Big Horn	273,526	215,789	78.9
Rosebud	170,113	114,167	67.1
Powder River	446,401	210,608	47.2
Custer	48,543	26,934	55.5
Treasure	3,978	1,858	46.7
Total	942,561	569,356	60.4

TABLE D-3.
BREAKDOWN OF RESPONSES BY NUMBER

County	Favor		Against		Undecided		Leased		Unqualified	
Big Horn	28	39%	19	26%	7	10%	8	11%	10	14%
Rosebud	7	16%	20	46%	6	14%	5	12%	5	12%
Powder River	27	26%	29	28%	27	26%	9	9%	11	11%
Custer	2	8%	12	46%	8	31%	0	0%	4	15%
Treasure	0	0%	1	50%	1	50%	0	0%	0	0%
Total	64	26%	81	33%	49	20%	22	9%	30	12%

TABLE D-4.
BREAKDOWN OF RESPONSES REPRESENTED BY ACREAGE

County	Favor		Against		Undecided		Leased		Unqualified	
Big Horn	127,799	59%	31,256	15%	10170	5%	13,517	6%	33,047	15%
Rosebud	26,733	23%	39,024	32%	5,381	5%	22,850	20%	20,139	18%
Powder River	50,711	24%	44,548	21%	74,924	36%	30,248	14%	10,177	5%
Custer	1,487	6%	8,274	31%	7,073	26%	0	0%	10,100	37%
Treasure	0	0%	1,520	82%	338	18%	0	0%	0	0%
Total	206,770	36%	124,622	22%	97,886	17%	66,615	12%	73,463	13%

The figures show that opinions about coal leasing vary significantly by county. In the following discussion, both "favor" and "leased" views are counted as "favor." Views of unqualified owners are not counted; however, it should be noted that unqualified owners include the State of Montana as well as coal companies and private individuals. In Big Horn County, views heavily favor coal leasing (58 percent of response, 77 percent of acreage). Only 31 percent of views (17 percent of acreage) oppose leasing, and few people (11 percent) are undecided. In contrast, a majority of views in Rosebud County oppose coal leasing (53 percent of response, 42 percent of acreage). Only 32 percent are in favor, and 15 percent are undecided. However, those in favor have 53 percent of the acreage surveyed in Rosebud County. In Powder River County, views are split more evenly;

39 percent are in favor, 32 percent against, and 29 percent undecided. However, the acreage held by undecided landowners (37 percent) is almost as great as the acreage held by those in favor (40 percent). Views against leasing hold only 23 percent of the acreage. In Custer County, views are mainly against (55 percent) or undecided (36 percent). Only 9 percent are in favor of leasing. These figures are fairly close to the acreage of owners against (49 percent), undecided (42 percent) and in favor (9 percent). The two responses received from Treasure County are too few a number to reach statistically significant conclusions.

The high percentage of undecided views in Powder River and Custer counties may reflect the fact that these counties are further away from coal development. People may be less personally affected by development and have not formed strong opinions.

The figures also show that large landowners tend to be more in favor of coal development than small landowners. The tables consistently show that the percentage of acreage in favor is greater than the percentage of landowners in favor. Overall, 55 percent of the acreage is in the "favor" category while only 40 percent of the landowners are in favor; 38 percent of the landowners are against leasing, but they only control 25 percent of the acreage. This pattern may be due to large ranchers being more able to afford part of their land being taken out of production for coal development. In contrast, small ranchers must depend on all their land to have a viable operation.

Deletions Due to Negative Surface Owner Views

As a result of surface owner consultation, over 98,543 acres of private surface over 4.62 billion tons of coal with development potential were deleted from further consideration for coal leasing due to negative surface owner views. By county, the acres and tonnages deleted are shown in Table 57.

Significant negative views satisfied one or more of the following criteria:

- They covered several sections in a solid pattern;
- They blocked up checkerboard federal coal ownership in a patter to preclude mine development;
- They were in addition to significant negative surface owner views expressed from the same owner in previous coal planning efforts;
- They covered a significant area adjacent to Custer National Forest; and/or
- They overlapped with or were adjacent to large areas deleted due to unsuitability criteria.

Some areas of federal coal without negative views were deleted where surrounded by or sandwiched between negative views in a pattern which would probably have prevented establishment of logical mining areas. In other cases, negative surface owner views covering only a small isolated area were not deleted.
Overlays showing application of the surface owner screens are available for inspection at the Miles City District Office.

Multiple Use Conflict Analysis

Coal planning regulation 43 CFR 3420.1-4e (3) states that "multiple land use decisions shall be made which may eliminate additional coal deposits from further consideration for leasing, to protect resource values of a locally important or unique nature not included in the unsuitability criteria."

Coal areas leased and cleared in previous planning were already analyzed for multiple use conflicts in the existing MFPs (Decker-Birney, South Rosebud, and Coalwood). These MFPs were determined to meet principles of multiple use/sustained yield as required by Section 103(c) and (h) of FLPMA. For this RMP, multiple use conflicts were considered only on the 964,700 acres of Federal coal in new planning which had passed through the unsuitability and surface owner screens. BLM requested information regarding religious sites from the Northern Cheyenne Tribe in compliance with the American Indian Religious Freedom Act. No information was received.

Factors in Analysis

Twelve resource categories and factors were defined which could be significantly affected by mining. These were:

- Negative surface owner views which were not deleted by the surface owner consultation screen;
- Soils in USDA Soil Conservation Service land capability classes VII and VIII. These are soils and landforms with questionable reclaimability due to the chemical and physical properties of the soils. Factors such as steep slopes, sodium content, and depth to bedrock, for example, influence this determination;
- Cropland in preliminarily identified AVFs and in areas of negative surface owner views defined in Category 1. Lands currently being used as cropland are delineated in the Conservation Districts' Long Range Program for Resource Conservation, published by the USDA Soil Conservation Service;
- Wildlife values, including white-tailed deer, mule deer, and antelope winter range and all-season use, and turkey raptor, and grouse habitat. Known potentially unsuitable wildlife values in areas where inventory was incomplete were also delineated as multiple use conflicts;
- Power plants and associated facilities;
- Areas of significant hunting or other recreations use, and Class II or higher VRM areas;
- Buffer zones around townsites;
- Forested areas, as defined on public surface by a BLM survey of commercial and noncommercial forest land conducted in the mid-1960s, and on private surface by shading on 1:100,000 scale USGS topographic maps;
- Oil and gas fields defined by the Montana Oil and Gas Commission and Known Geologic Structures defined by BLM;
- Cultural resource sites eligible for the NRHP but suitable for leasing with stipulations under the unsuitability criteria;
- Existing Allotment Management Plans;
- Areas preliminarily identified as AVFs by BLM staff. Color infrared aerial photography was analyzed as well as reconnaissance maps of alluvial valley floors in the Montana portion of the Powder River Basin, prepared by Earth Resources Associated in 1983 for the Office of Surface Mining. Consideration of AVFs for multiple use conflict purposes is in addition to the requirement under unsuitability Criterion 19 that alluvial valley floors be deleted at min plan stage. Some of these areas also contain riparian wildlife habitat.

Methods

Transparent overlays for each of the twelve multiple use categories were stacked onto 1:100,000 scale base maps for each of the six quadrangles with coal potential in the Resource Area (Birney, Broadus, Lame Deer, Powderville, Miles City, and Forsyth). While one multiple use conflict by itself was generally considered not enough to drop an areas from further coal leasing consideration, having several overlapping multiple use conflicts over a single area was considered significant. In general, areas with four or more overlapping multiple uses were deleted from further lease consideration. However, the actual number of overlaps needed varied. Power plants and townsite buffer zones were deleted whether or not there were additional overlaps. Areas containing very thick coal close to the surface and near current or proposed mining may have needed more than four multiple use conflicts to be deleted because the high coal potential of the area was weighted as an additional multiple use consideration. Some areas having fewer than four conflicts were deleted where they were wedged between large blocks of land with four or more overlapping conflicts.

Because of the large number of overlapping multiple uses in the Broadus and Birney quadrangles, two groups of BLM staff independently deleted areas from further leasing consideration. These two sets of maps were then compared and the final areas deleted, reflecting a compromise between the two groups. Areas were deleted based on legal subdivisions. Transparent overlays at 1:100,000 scale showing application of multiple use conflicts and areas deleted due to multiple use conflicts are available at the Miles City District Office for inspection.

Multiple use analysis was based on resource information available as of mid-1983.

Results

A total of 95,100 acres over 4.51 billion tons of federal coal with development potential were deleted due to multiple use conflicts. Most areas deleted due to multiple use conflicts are concentrated in corridors within a few miles of the Tongue and Powder rivers. These areas have soil, forest, wildlife, recreational, agricultural, and watershed characteristics which make them less environmentally desirable for mining. Other areas deleted due to multiple use conflicts lie near Rosebud, Otter, and Pumpkin creeks. The remaining areas are scattered throughout the rest of the coal area.

Areas deleted due to multiple use conflicts are summarized in Table D-5.

TABLE D-5.
AREAS DELETED DUE TO MULTIPLE USE CONFLICTS

County	Acres	Tons (billions)
Big Horn	5,400	0.71
Rosebud	36,500	2.24
Powder River	0	0.00
Custer	6,600	0.00
Treasure	46,600	1.34
Total	95,100	4.51

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Miles City District Office
P. O. Box 940
Miles City, Montana 59301

IN REPLY
REFER TO:

1608-PRRMP

Dear Landowner:

The Bureau of Land Management (BLM) is screening federal coal areas for potential leasing suitability in accordance with the Department of the Interior's coal management regulations. The screening is part of the process of preparing a resource management plan for public lands and federal minerals in the Powder River Resource Area.

Our review of federal and county records shows that you own the surface of lands in which the United States has retained ownership of the coal. On the enclosed consultation form you will find the legal description of these lands.

The Surface Mining Control and Reclamation Act of 1977 gives certain types of protection to surface owners who qualify under the law (see attached Public Law 95-87). The law contains both a consent requirement and a consultation requirement. If you qualify, the BLM cannot issue a coal lease and authorize a company to surface mine the coal under your land unless you agree to let that mining take place (the consent requirement). The surface mining law also requires BLM to consult with surface owners as part of the planning process and ask whether they favor or oppose leasing of coal under their land (the consultation requirement). A listing of surface owners who are being consulted within this planning project is available for review in the District Office.

The purpose of this letter is to consult with you and to give you a chance to tell us whether you favor or oppose leasing the coal under your land. The BLM is not now proposing to lease the coal under your land. Also, we are not asking for your consent to leasing and mining. The resource management plan we are preparing will help us decide which coal lands in the Powder River Basin should and should not be considered further for possible leasing. The decision on which specific coal lands will be leased will be made in a separate process after planning is completed.

The reason for this consultation with you and with other surface owners in your area is to give the BLM an opportunity to understand your feelings about surface mining of coal under your land. The coal under your land might be included in a tract which we would offer for federal leasing. However, if a significant number of qualified surface owners in your area are opposed to surface mining of coal under their land, we may decide to refrain from leasing any federal coal in that area for surface mining. If this is the case, receiving your views at this early stage of planning can allow us to avoid unnecessary work in making specific plans for coal leasing in your area.

Views Expressed During Consultation Not Binding

The views you express in this consultation are not binding, either on you or on the BLM. Here is what your views will do and what they will not do:

1. If you state at this time that you favor leasing, you may still stop surface mining at any time before a lease is issued by withholding your consent to mining. This will prevent the BLM from leasing the coal. However, if you have already given written consent to allow surface coal mining on your land, you may have already given your right to stop leasing and mining.

2. If you express a preference for leasing, the BLM is under no obligation to offer the coal under your land for lease. Analyses may indicate the coal should not be leased because of environmental problems, that other lands contain better coal and should be leased first, or that there is no need to lease the coal under your land because sufficient coal lands are already available for mining.

3. If you express a preference against surface coal mining under your land and a significant number of other surface owners in your area are opposed to leasing a part of or the whole area may be eliminated from consideration for leasing. However, the BLM will consider other matters, such as the availability of other coal land for leasing, in making the decision whether or not to issue leases in the area.

The Consent Requirement vs. The Consultation Requirement

The two protections of the surface mining law for surface owners are very different.

The consent requirement concerns each surface owner's authority to prevent surface mining or coal under his land. The BLM will not at any time seek consent from you directly. If a coal company wants to surface mine the coal under your land, the company will have to negotiate with you to try to get your consent to mine. If a qualified surface owner refuses to grant consent for surface coal mining, BLM is required to withhold the coal from leasing. Your decision to give consent or refuse consent does not need to be made until a later time when BLM is making specific coal leasing activity plans.

The consultation requirement of the law concerns the ability of a group of surface owners to influence coal leasing plans in their area. The BLM has to decide during the planning process whether to make lands eligible for coal leasing or to eliminate lands from leasing consideration within the life of the Resource Management Plan. If there are a significant number of surface owners opposed to leasing for surface mining and if other acceptable areas are available for leasing, the BLM may decide not to lease lands in the area for surface coal mining. Your preferences, along with those of neighboring surface owners, will be taken into consideration now, during planning.

The Effect of Significant Opposition to Leasing

If a significant number of surface owners in your area oppose leasing for surface coal mining, the BLM may issue no leases in the area, even though some surface owners do favor surface coal mining under their land. Just how many surface owners would amount to a "significant number" cannot be answered at this time. This will have to be determined on a case-by-case basis for each planning area. The exact effect of a significant number of surface owners stating a preference against leasing for surface coal mining is this: the area would be considered acceptable for leasing only for underground mining. However, if there are no other acceptable leasing areas, coal may be leased for surface mining in your area, even over the opposition of a significant number of surface owners in the area. But, in no case will the coal under your land be leased without your consent if you are a qualified surface owner.

Qualified Surface Owners

The protections of the surface mining law apply only to surface owners defined by the law. The law defined surface owners as a person or persons who:

(1) hold legal or equitable title to the land surface;

(2) have their principal place of residence on the land; or personally conduct farming or ranching operations upon a farm or ranch unit to be affected by surface coal mining operations; or receive directly a significant portion of their income, if any, from such farming or ranching operations; and,

(3) have met the conditions of paragraphs (1) and (2) for a period of at least three years prior to the granting of consent.

Unless you have already given consent, the third provision does not apply to you at this time. That is, you qualify as a surface owner under the law if you meet the first two criteria.

If you meet the requirements of the law listed above, you can help insure that your preferences are considered in the BLM planning process by letting us know that you meet each of the requirements. If you do not meet the requirements, please let us know this also.

If Consent to Mine has Already Been Given

If you have already given your consent to a coal company or someone else to surface mine the coal under your land, it is important that the BLM know about this in preparing its land use plans. Please send us a copy of any written consent you have given. If you do not have a written copy, please describe any consent you have given and attach this description to the enclosed consultation form you return to this office.

If you have already given your consent to surface coal mining on your land, the BLM will consider you to be in favor of mining those tracts to which the consent agreements apply [according to BLM regulations 43 CFR 3420.2-3(e)(2)].

Outside Advice

You may want to seek the advice of someone outside the federal government (for example, neighboring surface owners, a lawyer, or someone familiar with surface coal mining operations) before you answer this letter.

Time for Answering

For us to fully consider your views, we need to have your response by February 22, 1983. If we determine that you are a qualified surface owner, we will consider your attitude toward coal mining on your land as we plan for public resource uses in your area. You may use the enclosed form to express your views. It is designed so that you may respond individually to each separate parcel under consideration. The extra form is a duplicate for you to fill out and save so that you will have a record of your response. If we do not receive a response from you, your land will be carried forward in the planning process as acceptable for further coal leasing consideration.

If you have questions concerning consultation or any other aspect of the planning process, please feel free to call Jay Guerin or Ed Heffern at (406) 232-4331.

Sincerely yours,

Ray Brubaker

District Manager

Enclosures

PLEASE RESPOND BY FEBRUARY 22, 1983

I am expre my views concerning possible leasing of federal coal under my surface lands. I understand that my views are not legally binding as consent for leasing and that BLM is not proposing to lease any of my lands for surface mining of coal at this time. I also understand that my views may be used in the co pletion of the BLM land use plans and will be available for public review.

Please mark an x in the column which shows lew on leasing. A mark should be made next to each parcel listed.

1. I am in favor of leasing.
2. I am against leasing.
3. I am undecided whether I favor or oppose leasing.
4. I have already given written consent for surface mining.

	1	2	3	4

Please Check One: ☐ I am authorized to express my views as a qualified surface owner, having met the following requirements for at least the past 3 years (or less if I have given written consent): I hold legal or equitable title to this land surface. I have my principal residence on this land, or I personally farm or ranch on this land, or I receive a significant portion of my income from farm or ranch operations on this land. I have met the requirements since _____.

☐ I do not meet these requirements (please explain on reverse side).

Date: _____

Signature: _____

313

SURFACE OWNER PROTECTION

30 USC 1304.

SEC. 714. (a) The provisions of this section shall apply where coal owned by the United States under land the surface rights to which are owned by a surface owner as defined in this section is to be mined by methods other than underground mining techniques.

(b) Any coal deposits subject to this section shall be offered for lease pursuant to section 2(a) of the Mineral Lands Leasing Act of 1920, as amended.

30 USC 201.

Consent.

(c) The Secretary shall not enter into any lease of Federal coal deposits until the surface owner has given written consent to enter and commence surface mining operations and the Secretary has obtained evidence of such consent. Valid written consent given by any surface owner prior to the enactment of this Act shall be deemed sufficient for the purposes of complying with this section.

(d) In order to minimize disturbance to surface owners from surface coal mining of Federal coal deposits and to assist in the preparation of comprehensive land-use plans required by section 2(a) of the Mineral Lands Leasing Act of 1920, as amended, the Secretary shall consult with any surface owner whose land is proposed to be included in a leasing tract and shall ask the surface owner to state his preference for or against the offering of the deposit under his land for lease. The Secretary shall, in his discretion but to the maximum extent practicable, refrain from leasing coal deposits for development by methods other than underground mining techniques in those areas where a significant number of surface owners have stated a preference against the offering of the deposits for lease.

"Surface owner."

(e) For the purpose of this section the term "surface owner" means the natural person or persons (or corporation, the majority stock of which is held by a person or persons who meet the other requirements of this section) who—

(1) hold legal or equitable title to the land surface;

(2) have their principal place of residence on the land; or personally conduct farming or ranching operations upon a farm or ranch unit to be affected by surface coal mining operations; or receive directly a significant portion of their income, if any, from such farming or ranching operations; and

(3) have met the conditions of paragraphs (1) and (2) for a period of at least three years prior to the granting of the consent.

In computing the three-year period the Secretary may include periods during which title was owned by a relative of such person by blood or marriage during which period such relative would have met the requirements of this subsection.

(f) This section shall not apply to Indian lands.

(g) Nothing in this section shall be construed as increasing or diminishing any property rights by the United States or by any other landowner.

<End of Powder River RMP

LOCATABLE MINERALS AND MINERAL MATERIALS

LOCATABLE MINERALS DISPOSAL ACTIONS

Locatable minerals are governed by the federal Mining Law of 1872, as amended. This law provides for the exploration, discovery, and mining of metallic and certain nonmetallic minerals on federal lands. The Mining Law of 1872, as amended, has five elements: discovery of a valuable mineral deposit, location of mining claims, recordation of mining claims, maintenance of mining claims, and mineral patenting. The BLM manages the last three elements.

DISCOVERY

Federal statutes do not describe what constitutes a valuable mineral deposit. Several judicial and administrative decisions over the years have shaped a definition. A principal part of the definition is the "prudent man rule." This rule holds that the statutory requirements for a discovery have been met if a person of ordinary prudence will be justified in expending labor and costs to develop a mine. Departmental decisions require a discovery on each claim with physical exposure of the valuable mineral within the claim boundaries, and each 10 acres on a placer claim must be "mineral in character." Mineral in character is a discovery based on geologic inference, not necessarily on actual exposure.

LOCATION

Any U.S. citizen or corporation organized under state laws can locate a mining claim. A claimant can hold a number of mining claims. A mining claim is located on federal mineral estate with valuable deposits of locatable minerals. There are two types of mining claims (lode and placer) and two types of mineral entries (mill and tunnel sites).

Lode claims include classic vein deposits with well-defined boundaries, which include deposits such as gold and silver. Placer claims are those not subject to lode claims, which include bedded deposits such as bentonite. Both placer and lode claims have been filed for uranium. Placer claims are located by legal land subdivision, where practical. The maximum size of a placer claim is 20 acres per claim.

A mill site is a parcel of public land of a non-mineral character and is used to support mining claim operations. The mill site must include the erection of a mill or reduction works incident to mining. The maximum size of a mill site is 5 acres. Tunnel sites are plots of land where a tunnel is used to develop a vein. There is no known need for tunnel sites in the planning area.

Claimant rights include access to the claim across federal surface; use of timber on the claim for the mining operation; construction of fences and gates to protect the area of operations and equipment; and construction of structures for storing equipment, housing employees, and testing and processing facilities. Mining claims are real property and interests in mining claims can be bought or inherited.

RECORDATION

Claims and sites must be recorded with both the county and BLM. Location notices contain the date of location, the locator's name, the name of the claim or site, the type of claim or site, the acreage claimed, and a description of the parcel claimed.

FLPMA of 1976 requires claimants to file a copy of the notice or certificate of location with the BLM. Maps and other documents filed under state law must accompany the copy of the official record. Federal regulations (43 CFR 3833) specify the information required. Amendments and transfers of ownership must be filed with the BLM.

MAINTENANCE

To maintain an interest in a claim, the claimant must pay a rental fee of $100 per claim each year. There is a provision for fee exemptions for claimants who qualify by producing between $1,500 and $800,000 under an active notice plan with less than 10 acres disturbance on 10 claims or fewer nationwide.

Exploration and mining activity on BLM-administered lands are subject to the regulations in 43 CFR 3809. These regulations require an operator to prevent unnecessary and undue degradation of the land. There is no requirement to notify the BLM of casual use activities (negligible disturbance). Actions that are proposed to disturb less than 5 acres requires the filing of an NOI. This includes activities that involve use of earth-moving equipment or blasting. The BLM reviews the NOIs to ensure that unnecessary and undue degradation would not occur. However, the BLM has no approval authority for NOIs.

Activities involving more than 5 acres of disturbance require the preparation of a Plan of Operations and a reclamation plan. Special category lands defined in 43 CFR 3809.1-4 always require a Plan of Operations, regardless of the size of the disturbance area. These include areas of ACECs, wilderness areas, and areas designated as closed to OHV use. Both Notice level of activity and Plans of Operation require a financial guaranty that covers 100 percent of the cost to reclaim the proposed disturbance. Claim operations (whether casual, under a notice, or by a Plan of Operations) shall be reclaimed (43 CFR 3809.1-1).

In certain cases, lands might be withdrawn from operation under the public land laws; in certain cases this law will be the Mining Law of 1872, as amended. A withdrawal of public lands from location of mining claims under the Mining Law of 1872, as amended would be subject to valid existing rights. Therefore valid existing claims would still be subject to operations under 43 CFR 3809 et seq. and 43 CFR 3715 et seq. Upon receipt of a Notice or Plan of Operations pursuant to 43 CFR 3809.100 BLM would require a validity examination to determine whether the claims upon which operations are proposed were valid before the time of withdrawal and remain valid. Operations would only be authorized upon claims determined to be valid. The withdrawal would prohibit the location of new claims within the withdrawal area.

MINERAL PATENTS

A patented mining claim is one for which the federal government has passed its title to the claimant, making it private land. A person can mine and remove minerals from a mining claim without a mineral patent. In most cases, a mineral patent gives the owner exclusive title to the locatable minerals and title to the surface and other resources. Patenting requires discovery of a valuable deposit that meets the prudent man rule and marketability tests. A federal mineral examiner examines the claim to verify its validity. Because issuance of new mineral patents was prohibited by a special moratorium issued by Secretary of the Interior Bruce Babbitt in 1994, they are no longer issued.

MINERAL MATERIALS DISPOSAL ACTIONS

The BLM issues mineral material (sand and gravel, scoria, and other materials) sales contracts to companies and individuals as well as free use permits to local governments. The sales and permits are discretionary and only issued where the use is in compliance with the RMP and is compatible with other resource values and uses. The permits are also stipulated for protection of other resource values. A pit is typically on a gravel source located by the permittee. A BLM representative is shown the site during an inspection and a NEPA document is prepared. A typical permit operation begins with removal of the topsoil and its storage on location. The storage site is selected for the protection and stability needed to maintain the soil over the lifetime of the operation. Backfill will be consolidated to match the original material as much as possible. Natural vegetation will establish some protection from erosion. The pit is excavated by bulldozers and front-end loaders and the material hauled away with trucks. In operations where large rocks are in the deposit, a portable rock crusher is used to reduce them to usable sizes.

An average pit in the planning area is excavated to 10 feet in depth. At the end of operations, BLM stipulations require reduction of vertical exposures to a slope ratio of 3 to 1 (horizontal to vertical) and the topsoil spread on the surface. A conventional seed mixture is prescribed for reclaiming abandoned material extraction sites.

SOLID MINERALS RFD

ASSUMPTIONS

Various assumptions were made to facilitate the RFD analysis of potential impacts from solid mineral development. These assumptions were based on historical events and the experience of BLM personnel and their knowledge of solid mineral resource development activity in the planning area.

General

Decisions and implementation of actions from any of the RMP alternatives would be in compliance with all valid existing rights, federal regulations, bureau policies, and other requirements.

The establishment of RFD boundaries and other numerical values used in this analysis are approximate and were used only for comparison and analytic purposes. Readers should not infer that they reflect exact values or accurate projections. Where an RMP alternative supports solid mineral development or use, the assumptions described below were applied.

COAL

The coal leasing decisions made in the Big Dry and Powder River RMPs (BLM 1996 and 1985c) are being carried forward (adopted) in this planning document and include areas identified as acceptable for further consideration for coal leasing. Therefore, the lands considered acceptable for further consideration for coal leasing that are described in the aforementioned documents should be taken into consideration solely for the purpose of presenting potential impact analyses related to future coal development in the planning area. The coal screening process will be applied on a case-by-case basis in response to individual coal lease applications. The explanation of the coal leasing process can be found in the previous RMP decision appendices and is further explained in the coal section of this document's appendix.

Previous planning efforts identified approximately 62.20 billion tons of coal available for further consideration for coal leasing (not including coal that was leased at the time) in the Powder River RMP area and 6.18 billion tons of coal were found acceptable for further consideration for leasing in the Big Dry Resource Area RMP. The total amount of coal considered available for further consideration for coal leasing in both RMPs combined is approximately 68.38 billion tons.

It is assumed that future applications to lease coal would be made for areas in and around existing mines to sustain those operations and that coal leasing for potential new mine developments (not associated with existing mines) would also be applied for via the lease by application process. A description of a generic mine operation was developed for the Big Dry RMP (BLM 1995). That generic mine plan is located in the *Minerals Appendix* of the Big Dry RMP and can be referred to for a general description of the characteristics relating to the development of a new mine in the planning area. It is also possible that future coal leasing activity could occur to support coal conversion technologies such as in-situ gasification or coal to liquids projects.

There are five permitted coal mines within or adjacent to the Field Office Planning Area. The active Absaloka Mine is located just outside of but adjacent to the western boundary of the field office. It currently contains 7,110 permitted acres and is included in this discussion because our RFD indicates that future expansion would include lands within the field office planning area. The Big Sky Mine includes 7,633 permitted acres; however, the Big Sky Mine is not included in any future RFD projections because it has been fully reclaimed and all facilities have been removed. The following mines are currently mining coal; Decker 11,718 permitted acres, Rosebud 16,288 permitted acres, Savage 1,293 permitted acres, and Spring Creek 9,115 permitted acres.

According to the Office of Surface Mining and Enforcement (OSM), since 1999, approximately 39,831 cumulative acres in Montana have been disturbed as a result of surface coal mining, and of this area, approximately 20,003 acres have been fully reclaimed. A portion of this reclamation exists at the Absaloka and Big Sky mines (USDI, OSM, 2013).

Cumulatively, since 1970, about 801.4 million tons of federal coal has been produced by the Rosebud, Spring Creek, Big Sky, Decker and Savage mines and about 442.8 million tons of federal recoverable coal reserves are currently under lease at these mines. In 2012, these mines produced a total of 21,625,846 tons of federal coal (USDI, BLM 2013, Personal Communication (Data Source ONRR Reports)).

Since 1990, the BLM has leased about 218.99 million tons of federal coal in Montana via the lease modification and lease by application processes to sustain production at existing mines. Leasing proposals in the planning area that are pending at the BLM comprise about 229.5 million tons of in place coal representing 2,242 acres (see Table 42).

TABLE 42.
PENDING COAL LEASING APPLICATIONS

	Short Tons	Acres
Spring Creek	206.1	1772
Rosebud	5.9	160
Decker	17.5	310
Total	**229.5**	**2242**

According to the U.S. Energy Information Administration (EIA) *Annual Energy Outlook 2013*, the demand for coal in the United States would decrease in the near term as a result of flat demand for electricity, increasing share of electricity generated from renewables, low natural gas prices and high coal prices. The EIA *Annual Energy Outlook 2013* also forecasts that new requirements to control emissions of mercury and acidic gases will result in shutting down some coal fired power plants which will contribute to the suppression of near term demand for coal. However, after 2016, EIA forecasts that coal production will increase about 0.6 percent per year through 2040, as a result of increased coal exports and an increased demand for domestic coal for electricity generation due to increasing natural gas prices.

Consequently, based on the above information, it is assumed that production at operating mines in the planning area (Spring Creek, Decker, Rosebud, Absaloka and Savage) will require additional coal as existing reserves are consumed. It is assumed that most mines will either continue current production rates or adjust accordingly to meet changes in market demand in accordance with the EIA *Annual Energy Outlook 2013* forecast. Applying the increased production forecast of 0.6 percent per year to each mine beginning after 2016 is shown in Table 43. The source for the 2012 production data for each mine was obtained from the MDEQ, website for Historical Energy Statistics, Energy Source Workbooks, Coal Tables Workbook - 2012 Update, Table C4. Coal Production by Company, 1980-2012 (short tons), (http://deq.mt.gov/Energy/HistoricalEnergy/default.mcpx).

The BLM has developed RFD areas that approximate where future mining activity might occur. The estimate of in-place coal reserves (Table 44 includes existing leased and unleased coal reserves within individual mine plan boundaries as well as coal that is outside the mine plan boundaries but within the RFDs which are shown on maps 35 through 39. These estimates indicate that the reserves within the RFDs are sufficient to sustain production at the Spring Creek/Decker (see Map 34), Absaloka (see Map 31) and Savage (see Map 33) mines at the rates shown in Table 59 through the year 2040, and the Rosebud Mine (see Map 32) through year 2038. It is likely that most new lease applications would be located within the RFDs. However, it is possible that a minority of lease proposals could be located outside of the RFD boundaries. Short term is defined as mining and exploration activity being conducted from the present to 2019 and long term includes this activity out to 2040.

The BLM has also prepared an estimate of surface disturbance (Table 45) resulting from the production estimates shown above in Table 42. The disturbance estimate assumes that production would increase slightly on a yearly basis as described above. Also, the disturbance acres represent only the area above the coal projected to be mined. It doesn't include associated disturbances for features such as pit layback, roads and facilities. The disturbance figures are for analysis purposes only and do not precisely represent the exact disturbance which would occur at any given mine due to a multitude of variables which are not possible to predict

TABLE 43.
COAL MINE PRODUCTION FORECAST*

Year	Decker East Decker	Decker West Decker	Cloud Peak Spring Creek	Westmoreland Savage	Westmoreland Rosebud	Westmoreland Absaloka
2012	2,247,873	484,570	17,200,109	296,454	8,010,495	2,714,063
2013	2,247,873	484,570	17,200,109	296,454	8,010,495	2,714,063
2014	2,247,873	484,570	17,200,109	296,454	8,010,495	2,714,063
2015	2,247,873	484,570	17,200,109	296,454	8,010,495	2,714,063
2016	2,247,873	484,570	17,200,109	296,454	8,010,495	2,714,063
2017	2,261,360	487,477	17,303,310	298,233	8,058,558	2,730,347
2018	2,274,928	490,402	17,407,130	300,022	8,106,909	2,746,729
2019	2,288,578	493,345	17,511,572	301,822	8,155,551	2,763,210
2020	2,302,309	496,305	17,616,642	303,633	8,204,484	2,779,789
2021	2,316,123	499,283	17,722,342	305,455	8,253,711	2,796,468
2022	2,330,020	502,278	17,828,676	307,288	8,303,233	2,813,247
2023	2,344,000	505,292	17,935,648	309,131	8,353,053	2,830,126
2024	2,358,064	508,324	18,043,262	310,986	8,403,171	2,847,107
2025	2,372,213	511,374	18,151,521	312,852	8,453,590	2,864,190
2026	2,386,446	514,442	18,260,430	314,729	8,504,312	2,881,375
2027	2,400,764	517,529	18,369,993	316,618	8,555,337	2,898,663
2028	2,415,169	520,634	18,480,213	318,517	8,606,669	2,916,055
2029	2,429,660	523,758	18,591,094	320,428	8,658,309	2,933,551
2030	2,444,238	526,900	18,702,641	322,351	8,710,259	2,951,153
2031	2,458,903	530,061	18,814,856	324,285	8,762,521	2,968,859
2032	2,473,657	533,242	18,927,746	326,231	8,815,096	2,986,673
2033	2,488,499	536,441	19,041,312	328,188	8,867,987	3,004,593
2034	2,503,430	539,660	19,155,560	330,157	8,921,194	3,022,620
2035	2,518,450	542,898	19,270,493	332,138	8,974,722	3,040,756
2036	2,533,561	546,155	19,386,116	334,131	9,028,570	3,059,000
2037	2,548,762	549,432	19,502,433	336,136	9,082,741	3,077,354
2038	2,564,055	552,729	19,619,448	338,153	9,137,238	3,095,819
2039	2,579,439	556,045	19,737,164	340,182	9,192,061	3,114,393
2040	2,594,916	559,381	19,855,587	342,223	9,247,214	3,133,080
Total	**69,426,912**	**14,481,666**	**514,035,623**	**8,859,706**	**239,398,471**	**81,111,408**

*** Short tons**

TABLE 44.
RFD ESTIMATED COAL RESERVES LEASED AND UN-LEASED (MILLIONS OF SHORT TONS)

Spring Creek	539	Absaloka	177
Decker	218	Savage	20
Rosebud	212		

TABLE 45.
PROJECTED ADDITIONAL ACRES OF COAL MINE DISTURBANCE

	Decker*	Decker*	Cloud Peak*	West-moreland*	*Big Horn	West-moreland	West-moreland
	East	West	Spring		County	Savage	Rosebud
Year	Decker	Decker	Creek	Absaloka	Total	Richland County	Rosebud County
2012	28.1	6.1	128.4	66.2	228.7	9.9	228.9
2013	28.1	6.1	128.4	66.2	228.7	9.9	228.9
2014	28.1	6.1	128.4	66.2	228.7	9.9	228.9
2015	28.1	6.1	128.4	66.2	228.7	9.9	228.9
2016	28.1	6.1	128.4	66.2	228.7	9.9	228.9
2017	28.3	6.1	129.1	66.6	230.1	9.9	230.2
2018	28.4	6.1	129.9	67.0	231.5	10.0	231.6
2019	28.6	6.2	130.7	67.4	232.9	10.1	233.0
2020	28.8	6.2	131.5	67.8	234.2	10.1	234.4
2021	29.0	6.2	132.3	68.2	235.7	10.2	235.8
2022	29.1	6.3	133.0	68.6	237.1	10.2	237.2
2023	29.3	6.3	133.8	69.0	238.5	10.3	238.7
2024	29.5	6.4	134.7	69.4	239.9	10.4	240.1
2025	29.7	6.4	135.5	69.9	241.4	10.4	241.5
2026	29.8	6.4	136.3	70.3	242.8	10.5	243.0
2027	30.0	6.5	137.1	70.7	244.3	10.6	244.4
2028	30.2	6.5	137.9	71.1	245.7	10.6	245.9
2029	30.4	6.5	138.7	71.6	247.2	10.7	247.4
2030	30.6	6.6	139.6	72.0	248.7	10.7	248.9
Total	**552.0**	**112.9**	**2,393.5**	**1,234.3**	**4,264.7**	**184.3**	**4,267.7**

Note: the data presented in the above table was calculated by dividing the approximate tons per acre value (Decker 80,000 tons/acre, Spring Creek 134,000 tons / acre, Absaloka 41,000 tons/acre, Savage 30,000 tons/acre and Rosebud 35,000 tons/acre by the mine production forecast values presented in Table 58 (Personal Communication, 12-4-13, BLM Solid Minerals Staff, MSO).

DECKER MINE

In accordance with the EIA *Annual Energy Outlook 2013* forecast, it is assumed that the Decker Mine (Map 34) will produce coal at the 2012 production rate until about 2016. After 2016, the mine is projected to increase production at a rate of 0.6% per year until 2040. At that rate, the Decker Mine (East and West) would require about 83.9 million tons of coal reserves to achieve this production forecast to 2040. There are an estimated 218 million tons of leased and un-leased, in-place coal reserves within the mine plan and RFD boundaries. The production forecast for future production at Decker may be conservative, but the existing reserves represent about 2.5 times the EIA forecast.

SPRING CREEK MINE

In accordance with the EIA *Annual Energy Outlook 2013* forecast, it is assumed that the Spring Creek Mine (Map 34) will produce coal at the 2012 production rate until about 2016. After 2016, the mine is projected to increase production at a rate of 0.6% per year until 2040. At that rate, the Spring Creek Mine would require about 514 million tons of coal reserves to achieve this production forecast to 2040. There are an estimated 539 million tons of leased and un-leased, in-place coal reserves within the mine plan and RFD boundaries.

ROSEBUD MINE

In accordance with the EIA *Annual Energy Outlook 2013* forecast, it is assumed that the Rosebud Mine will produce coal at the 2012 production rate until about 2016. After 2016, the mine is projected to increase production at a rate of 0.6% per year until 2040. At that rate, the Rosebud Mine would require about 239.3 million tons of coal reserves to achieve this production forecast f to 2040. There are an estimated 212 million tons of leased and un-leased, in-place coal reserves within the mine plan and RFD boundaries which would be depleted about the year 2038.

NORTH ASHLAND RFD

The federal coal leases that existed within the North Ashland RFD have been relinquished. Therefore, the North Ashland RFD has been removed from further consideration as an RFD, as any potential development there would be considered highly speculative.

SAVAGE MINE

In accordance with the EIA *Annual Energy Outlook 2013* forecast, it is assumed that the Savage Mine (Map 33) will produce coal at the 2012 production rate until about 2016. After 2016, the mine is projected to increase production at a rate of 0.6% per year until 2040. At that rate, the Savage Mine would require about 8.8 million tons of coal reserves to achieve this production forecast to 2040. There are an estimated 20 million tons of leased and un-leased, in-place coal reserves within the mine plan boundary. The coal production forecast for the Savage Mine may be optimistic given that this mine produces a lower grade coal (lignite) and has only 2 primary customers, located in Sidney, Montana.

ABSALOKA MINE

Westmorland Resources operates the Absaloka Mine (Map 31) which is located adjacent to, but just outside of the planning area in Big Horn County, Montana. The mine produces from Indian coal leases held in trust for the Crow Tribe by the federal government. Westmoreland Resources has recently acquired private coal located east of the Absaloka Mine and has recently conducted exploratory drilling on those properties. Therefore, BLM staff has determined that it would be reasonable to assume that future leasing requests for federal coal in the area where the private coal leases are located would be submitted in the future. Therefore, an RFD was developed for that area.

In accordance with the EIA Annual Energy Outlook 2013 forecast, it is assumed that the Absaloka Mine (Map 31) will produce coal at the 2012 production rate until about 2016. After 2016, the mine is projected to increase production at a rate of 0.6% per year until 2040. At that rate, the Absaloka Mine would require about 81.1 million tons of coal reserves to achieve this production rate to 2040. There is an estimated 177 million tons of leased and un-leased, in-place coal reserves within the mine plan and RFD boundaries.

OTHER POTENTIAL FUTURE COAL DEVELOPMENT AREAS

Three sites in the planning area (the proposed Otter Creek and Youngs Creek Mines, and an exploration area located on the Crow Indian Reservation have been identified as possible new development areas. However, the BLM does not anticipate the need for any federal coal from these areas within the long term. There are no federal coal reserves within the proposed Otter Creek Mine, and the coal deposits on the Crow Indian Reservation and the proposed Young's Creek Mine (located south of the Montana/Wyoming border) are not subject to decisions resulting from this RMP; subsequently, development of an RFD for those areas was not necessary. Other potential projects such as in-situ gasification of deep coal seams occurring in the planning area was considered speculative and an RFD was not prepared for this type of development.

COAL EXPLORATION

Coal exploration usually involves drilling activity to obtain information about the subsurface and coal zones of interest. In the planning area, this usually involves relatively shallow drill holes less than 800 feet deep. Typical

coal exploratory drilling equipment would include a drill truck similar to a water well drilling truck, a water truck, crew truck and possibly a truck-mounted geophysical logging unit.

Most drill sites are accessed via existing two-track trails with possible segments of off-road access. Road construction is usually not required but does occur on occasion but only short segments and only where absolutely necessary.

Usually one or two holes are drilled at each location depending on the data needs of the company and the confidence in existing data. If a core sample of the coal is needed then a company might drill a pilot hole through the coal zone. They would then probe the drill hole with geophysical equipment to determine the exact top of the coal seam. The drill would then move a short distance away and drill a second hole to just above the top of the coal seam and then take a core sample for analysis.

The drill holes are usually plugged to within two feet of the surface with a bentonite chips unless artesian conditions are encountered, then the bore hole must be cemented to surface. The drill cuttings are then scattered on the surface of the site to less than ½ inch thick hauled off to a disposal area or buried in the mud pit if one was used. Most coal exploration bore holes are drilled with a mixture of air, water and a foaming agent

Sites usually do not require any surface disturbing preparation as the drill trucks are self-leveling. Commonly, the only surface disturbance at the drill site is the borehole itself. However, some operators do use a small dug pit to contain cuttings and any drilling fluids.

NON-ENERGY LEASABLE MINERALS

Non-energy, leasable minerals include gypsum, sodium, and phosphate. They would also include minerals that are normally classified as locatable, but only on lands acquired under the Bankhead Jones Act. While some typical non-energy leasable minerals do occur in the planning area, they occur at great depth, which makes them uneconomical to recover. However, there is one known deposit that contains minable reserves of sodium sulfate, which is located within the confines of Brush Lake and Westby B Lake in Sheridan County. The BLM administers only 16 surface and mineral acres at the Westby B Lake, and it is unlikely that leasing of these minerals would occur. In addition, it is also unlikely that mineable deposits of locatable minerals such as bentonite and uranium occur within the limits of Bankhead Jones lands administered by the MCFO; subsequently, an RFD scenario was not developed for these minerals.

LOCATABLE MINERALS

Locatable minerals are those minerals for which a mining claim can be staked. Although, there is very low potential for locatable minerals such as gold, chromium, titanium, zeolite, and associated minerals such as copper, lead, and zinc in the planning area, there is high potential for bentonite and uranium.

Although gold placer mining took place in the gravels of the Yellowstone River as far downstream as Miles City in the early 20th century, there is no record of the quantity of the gold that was recovered. Even though gold reportedly occurs in the Yellowstone River, it appears that the occurrence is highly sporadic, not well defined, and so limited in scope, that it represents only a recreational interest. Moss agates also occur in the gravels of the Yellowstone River and it is assumed that the recreational collection of gold and agates would continue.

Most mineral commodities are currently at high monetary values when compared with values over the last 25 years. It is assumed that commodity prices would fluctuate around current price levels or increase modestly over both the short and long term periods. It is assumed that sustained or increasing prices would generate interest in exploration and development of locatable mineral properties.

Activities that qualify as casual use (e.g., staking claims, prospecting with hand tools) can be conducted without notification or approval by BLM. However, casual users must observe the rules for Limited OHV areas.

Operators must submit a Notice for exploration actions above casual use 43 CFR 3809.21 that would disturb less than 5 acres and do not meet the requirements of 43 CFR 3809.11. A NEPA analysis is not conducted for Notices, which do not constitute a federal action and are not subject to federal approval. If the proposed action would not cause unnecessary or undue degradation as defined in 434 CFR 3809.5 and addressed in 43 CFR 3809.415, the Notice is accepted by the BLM. Although Notices in the planning area would include exploratory drilling activity, they could include small-scale sampling of less than 1,000 tons.

Any mining operations or proposed exploration that causes surface disturbance greater than 5 acres, a disturbance of any size proposed within a special management area (such as an ACEC), any bulk sampling that removes 1,000 tons or more of presumed ore for testing, or any surface-disturbing operations within lands or waters known to contain federally proposed or listed threatened or endangered species or their habitat requires a Plan of Operations be submitted to the BLM for approval. A detailed operations and reclamation plan is required and a NEPA analysis and public review of the Plan of Operations or environmental document would be conducted. As a result, resource values and impacts are studied and documented and comprehensive reclamation plans that satisfy BLM requirements are incorporated into the Plan of Operations.

Activities, conditions, or practices that fail to comply with the performance standards found in 43 CFR 3809.420, the terms and conditions of an approved Plan of Operations described in a complete Notice, or other state and federal laws related to environmental protection and the protection of cultural resources would constitute unnecessary and undue degradation. For example, if threatened and endangered species were present and the proposed actions caused impacts to species that could not be mitigated, the action would potentially be denied. Proposed activities under Notices and POs cannot cause unnecessary or undue degradation. The BLM would consult with American Indian Tribes on proposed POs, as required. If the proposed action would not cause unnecessary or undue degradation the Plan of Operations would be approved.

However, federal regulations allow reasonable and necessary disturbance. In the absence of requirements imposed by state or federal laws pertaining to the subject resource, such as threatened or endangered species or cultural resources, it may not be possible to deny operations. It would, however, be possible to impose reasonable mitigation measures to reduce impacts. These mitigation measures are limited to the prevention of UUD, as defined in 43 CFR 3809.5 and addressed in 43 CFR 3809.415. These mitigation measures would subject the claimant or operator to delays, additional expense, possible loss of revenue, and alteration of mining plans.

Mitigation measures as defined in 43 CFR 3809.5 and addressed in 43 CFR 3809.415 are developed based on a site-specific review of the Notice or Plan of Operations and must be implemented by the operator. Although mitigation is not expected to eliminate all (or even most impacts), it is required to address potential impacts that would otherwise constitute unnecessary or undue degradation without mitigation.

The definition of mitigation includes elimination of the action or parts of an action. However, for operators exercising their rights under the Mining Law of 1872, as amended the BLM can only stipulate mitigation requiring that the operator eliminate the action or part of the action necessary to eliminate what would otherwise constitute unnecessary or undue degradation.

In most situations, ROWs and land use authorizations would not be needed because an operator is entitled access to his operation; however, access must be built or utilized in accordance with the surface management regulations found in 43 CFR 3809.420.
Because both NOIs and POs are required to be inspected on a regular basis, monitoring would occur. All operations under NOIs and POs are bonded by BLM for 100% of the cost of reclamation. The surface management regulations only apply to the BLM-administered surface estate and some lands patented under the Stock Raising Homestead Act, under certain conditions. The surface management regulations do not apply to acquired lands such as those acquired under the Bankhead-Jones Act. Mining claims cannot be located on acquired lands; subsequently, the minerals are administered as a non-energy leasable mineral.

Operators would be required to control invasive species on BLM-administered lands in their area of operations. Operators would be required to submit a pesticide use proposal for authorization to control invasive species on BLM-administered surfaces, which would cause additional expense for the operator.
Coal, oil, or gas conflicts with locatable mineral resource needs would not be anticipated under all alternatives. The planning area's primary locatable mineral development zone, as portrayed in the RFD, is not located within an area with coal development potential (see the *Minerals Appendix*). The zone is, however, located in an area with high potential for oil and gas development. If a conflict developed with coal, oil, or gas leasing, resolution of the conflict would be left primarily to the claimant, coal leaseholders, and oil and gas developers. The BLM would assist in conflict resolution if needed. Where allowed, the BLM would continue to process, within the scope of all pertinent rules and regulations, NOIs and POs for locatable mineral exploration and development and strive to ensure that those activities were conducted in an environmentally responsible manner. Conflict resolution would subject the claimant or operator to additional expense and delays.

BENTONITE

Bentonite is a locatable mineral that has an extensive presence in the planning area, and it is mined in Carter County by two mining companies; subsequently, it is the most likely locatable mineral to have potential for additional development within the planning area. Both operating mines will expand mining operations to meet demand as existing reserve areas are mined out.

The bentonite mining RFD area lies within a mining region in which two companies, American Colloid Company and Bentonite Performance Minerals operate (Map 36). The area is subdivided into the Alzada North and Alzada South areas. Most of the mining activity in the Alzada North area is north of the Ridge Road, within the Willow Creek watershed. The other mining activity within the region is the Alzada South mine area, which is located south of the Ridge Road and within the Thompson Creek watershed.

There is also an estimated 252 acres of un-reclaimed, previously mined bentonite lands located in the Alzada South area, which were mapped by the State of Montana Abandoned Mine Land program in 1988. Bentonite Performance Minerals re-disturbed about 53 acres of this pre-reclamation law mined area and has reclaimed about 46 acres.

The combined American Colloid Company and Bentonite Performance Minerals permitted acreage in Alzada North and South areas is about 17,025 acres, of which, about 6,222 have been disturbed by mining (Table 46). Much of the acreage that has been disturbed by mining has been reclaimed. About 2,619 acres have been fully reclaimed and released from bond liability and about 799 acres have been reclaimed but are still bonded and permitted.

TABLE 46.
DISTRIBUTION OF PERMITTED
ACREAGE IN BENTONITE RFD AREAS IN THE PLANNING AREA

Area	Total Permitted Acres	Permitted BLM-administered Acres	Permitted Private Acres	Total Disturbed Acres (includes Reclaimed Acres)
Alzada North	8,748	4,709	4,039	3,366
Alzada South	8,277	500	7,777	2,856
Total	**17,025**	**5,209**	**11,816**	**6,222**

In addition, American Colloid Company (J. Pharr, personal communication, September 28, 2009) has indicated that mining permits could be sought within the RFD area over the next 20 years, which includes about 21,545 mixed public and private acreage. In the RFD area, there are about 12,325 acres of federal surface on which the BLM would administer permits (about 57.2 percent of the RFD areas area). Therefore, it is assumed that mining and reclamation could occur on about 50 percent, or up to 10,772 acres of land, in the RFD area. These acreage values represent a rough estimate, "best guess" scenario based on limited exploratory drilling.

URANIUM

There has been a recent resurgence of interest regarding the development of in-situ uranium mining operations nationwide. There are several known sandstone hosted, roll front type uranium deposits located in Carter County, Montana, and a uranium exploration company showed some interest in exploring these deposits in 2008 to determine the economic viability of developing a uranium in-situ recovery operation. According to this company, their project consisted of 25,000 acres of mining claim blocks and leases located west of Alzada, Montana in Carter County. The company believes it may have sufficient reserves of uranium ore in at least three deposits in the area. However, additional exploratory drilling is required to confirm or expand the reserves in these areas.

A uranium RFD area has been developed for analysis purposes (Map 37). It is important to note that the Surface Management Regulations used to manage locatable mineral development only applies to BLM-administered surface lands. Although the BLM generally does not regulate locatable mineral actions on private surface, there is one exception: cases where the private surface owner of land patented under the Stockraising Homestead Act does not give permission to the mining claimant to conduct surface-disturbing operations. In that circumstance, the claimant must file a Plan of Operations with the BLM for approval. However, for the purpose of this analysis, the BLM will assume that only BLM-administered lands within the RFD area are subject to mineral location, exploration, and development. The total area within the RFD comprises about 69,521 acres. The BLM-administered land within the RFD area consists of approximately 34,154 acres.

It is assumed that exploratory drilling will occur sometime within the Uranium RFD area either in the short and long term periods. Drill trucks that are similar to water-well drilling rigs would conduct drilling in these areas with support equipment consisting of a water truck, electric (geophysical) logging vehicle, and crew support vehicle (pickup truck). The drill holes could range from 500 to 2,000 feet deep. It is not known if related surface disturbances such as road construction or pits to accommodate drilling fluids would occur. Although the number of exploratory sites that would be drilled is unknown, it could be several hundred.

It is assumed that an in-situ leaching facility for uranium extraction will be constructed in the long term period. Since the uranium deposits in this area are relatively deep (500 to 2,000 feet), it is likely that the in-situ leaching method of removing the ore would be employed if they were to be developed. It is also assumed that the in- situ leaching facilities would be within the range identified in the *Generic Environmental Impact Statement for In situ Uranium Leach Milling Facilities* (USNRC and Wyoming Department of Environmental Quality [WDEQ] 2009) (2,500 to 16,000 acres).

As the principal federal licensing agency, the Nuclear Regulatory Commission has evaluated the impacts associated with construction and operation of an in-situ uranium recovery operation in the *Generic Environmental Impact Statement for In situ Uranium Leach Milling Facilities* (GEIS, USNRC and WDEQ 2009). The document provides a good description of a generic in-situ leaching operation as well as the impacts associated with such a development. An excerpt follows:

> "A commercial ISL [in situ leaching] facility consists of both an underground and a surface infrastructure. The underground infrastructure includes injection and production wells drilled to the uranium mineralization zone, monitoring wells drilled to the surrounding ore body aquifer and to the adjacent overlying and underlying aquifers, and perhaps deep injection wells to dispose of liquid wastes. ISL [in situ leaching] facilities in the uranium milling regions considered in this GEIS (i.e., Wyoming West, Wyoming East, Nebraska-South Dakota-Wyoming, and Northwestern New Mexico) are commonly exposed to freezing conditions during winter months. Therefore, pipelines to transfer

> groundwater extracted from the well fields to the uranium processing circuit are buried to avoid freezing and thus are considered to be part of the underground infrastructure.
> ISL [in situ leaching] facilities also include a surface infrastructure that supports uranium processing. The surface facilities can include a central uranium processing facility, header houses to control flow to and from the well fields, satellite facilities that house ion-exchange columns and reverse osmosis equipment for groundwater restoration, and ancillary buildings that house administrative and support personnel. Surface impoundments such as solar evaporation ponds may be constructed to manage liquid effluents from the central processing plant and the groundwater restoration circuit (Figure 2.1-3).
>
> The surface extent of a full-scale (i.e., commercial) ISL [in situ leaching] facility includes a central processing facility and supporting surface infrastructure for one or more well fields (sometimes called mine units) and encompasses about 1,000 to 6,000 ha [2,500 to 16,000 acres] (NRC, 1992, 1997a) (see Section 2.11). However, the total amount of land disturbed by such infrastructure and ongoing activities at any one time is much smaller, and only a small portion around surface facilities is fenced to limit access (Figures 2.1-3 and 2.1-4). Well fields typically are not enclosed by fencing.
>
> NRC establishes the total flow rates and the maximum amount of uranium that can be produced annually at a commercial ISL [in situ leaching] facility using license conditions. NRC-licensed flow rates typically range from about 15,100 to 34,000 L/min [4,000 to 9,000 gal/min], and licensed maximum limits on annual uranium production range from about 860,000 to 2.5 million kg/yr [1.9 million to 5.5 million lb/yr] of yellowcake (NRC, 1995, 1998a, b, 2006, 2007). Actual production rates are generally somewhat lower than these limits (EIA, 2008) (USNRC and WDEQ 2009, pages 2–4 and 2–5)."

Please consult the above-cited document for a detailed explanation of the in-situ leaching process and associated impacts.

MINERAL MATERIALS

Generally within the planning area, the demand for mineral materials, such as clinker, sand, and gravel (primarily used for road construction) with lesser amounts of petrified wood, agate, and building stone, would increase at a moderate but steady rate over the short and long term. However, regional development of other resources such as the development of the oil fields which produce from the Bakken formation would cause a localized increase in demand for surfacing material where deposits of mineral materials are located within the vicinity of the oil development areas. This demand could be met by making federally owned mineral materials available by competitive sale where competitive interest exists.

It is assumed that five mineral materials permits (most likely for sand or gravel) would be issued per year over both the short and long term. Each mineral material site would operate for approximately 5 years, disturb about 5 acres, and yield about 50,000 cubic yards of material.

This page intentionally left blank.